

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.







United States  
Department of  
Agriculture

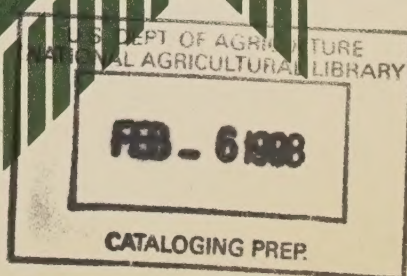
Economics  
and Statistics  
Service

ESS-3

# Economics and Statistics

## Program Results and Plans, 1980

a HD9004  
• E77  
no. 3





ECONOMICS AND STATISTICS: PROGRAM RESULTS AND PLANS, 1980.  
Economics and Statistics Service, U.S. Department of  
Agriculture. ESS-3.

### **Abstract**

The Economics and Statistics Service has two major missions within the U.S. Department of Agriculture: (1) to conduct economic and statistical research and analysis; and (2) to collect, develop, and disseminate economic and statistical information related to food, agriculture, natural resources, and rural communities. This report presents significant program results in fiscal 1980 and outlines some priority areas for fiscal 1981 and beyond.

ESS-3

## Contents

ii	Foreword
1	Introduction
2	Program Results for 1980
2	U.S. Food and Agriculture
11	International Trade and Development
19	Natural Resources and the Environment
25	Rural Development
29	Increasing Data Accuracy and Dependability
36	Meeting Future Information Needs
36	Directions for Food and Agriculture
41	International Trade and Development
44	Publications and Information Services
52	Field Stations and Cooperation With Universities
56	ESS Agricultural Statisticians in Charge of State Offices
58	ESS Senior Economists Outside of Washington, D.C.
60	Organizational Listing of ESS Officials

## Note

The results summarized in this report are often based on other published reports, in which case the publication's series and number (in parentheses) follow the summary. Most of the charts appearing in this report are taken from the 1980 Handbook of Agricultural Charts (Agriculture Handbook No. 574) published by ESS. All other charts are taken from reports published in fiscal 1980 by ESS, with the publication number shown on the chart. Free copies of ESS reports may be ordered from ESS Publications, Room 0054-S, U.S. Department of Agriculture, Washington, D.C. 20250, or by calling (202) 447-7255.



## Foreword

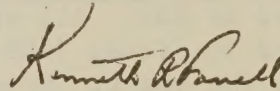
This annual report of program results and plans has two principal purposes:

- Provide an overview of the mission and functions of the Economics and Statistics Service by summarizing accomplishments in fiscal 1980.
- Provide a longer run economic research and data framework by outlining plans, priorities, and program emphasis for the future.

The need for timely, reliable, and relevant economic information has grown rapidly in recent years as a result of changes in the economic environment of agriculture and rural America. The purpose of ESS, simply put, is to serve that need in both the private and public sectors as effectively as possible as it relates to food, agriculture, natural resources, and rural people and communities.

To fulfill that purpose, our current programs and plans for the future have involved a process of extensive participation by users of economic information, including professional leaders, statistical data users, farm and rural organizations, consumers, Congress, and administrators of Federal programs. In addition, we work closely with other providers of economic and statistical information to attain complementarity in our programs.

We welcome your comments and questions concerning the content of this report.



KENNETH R. FARRELL  
Administrator

# **Economics and Statistics: Program Results and Plans, 1980**

## **Introduction**

The Economics and Statistics Service (ESS) was established on September 22, 1980, following the transfer of the technical assistance functions related to cooperatives from the former Economics, Statistics, and Cooperatives Service to the Agricultural Cooperative Service. The major mission of the ESS economics program is to formulate, develop, administer, and distribute the results of programs of economic research, analysis, and information related to national and international food and agriculture, natural resources, and rural communities. Principal goals of the ESS statistics program are to provide a wide range of accurate, dependable, and useful national and State data on crops and livestock, and to provide additional data needed for commercially important segments of the industry.

Economic information and statistical data are made widely available to farmers, processors, distributors,

consumers, and others who make production, marketing, and purchasing decisions, and to legislators and other public officials as the basis for development and administration of agricultural and rural policies and programs.

The headquarters of ESS is in Washington, D.C., but a large part of the crop and livestock estimates program is carried out through 44 State Statistical Offices serving the 50 States. Most of these are operated as joint State and Federal services through cooperative arrangements with State agencies. Economic analysis and research are conducted in Washington, D.C., and in 31 States, primarily at the land grant colleges and universities. As of September 30, 1980, ESS had 2,050 full-time and 352 part-time employees; 888 full-time and 148 part-time employees were at 92 State locations outside of Washington, D.C.



# Program Results for 1980

## U.S. Food and Agriculture

### U.S. Food and Agriculture

A major part of the ESS program encompasses research and analysis of the U.S. food and fiber industry from the farm to the consumer and includes: commodity analysis; farm sector economics; food system research; farm income, productivity, cost of production, and price spreads; food prices; and agricultural and food policies. Some of the significant results in fiscal 1980 follow.

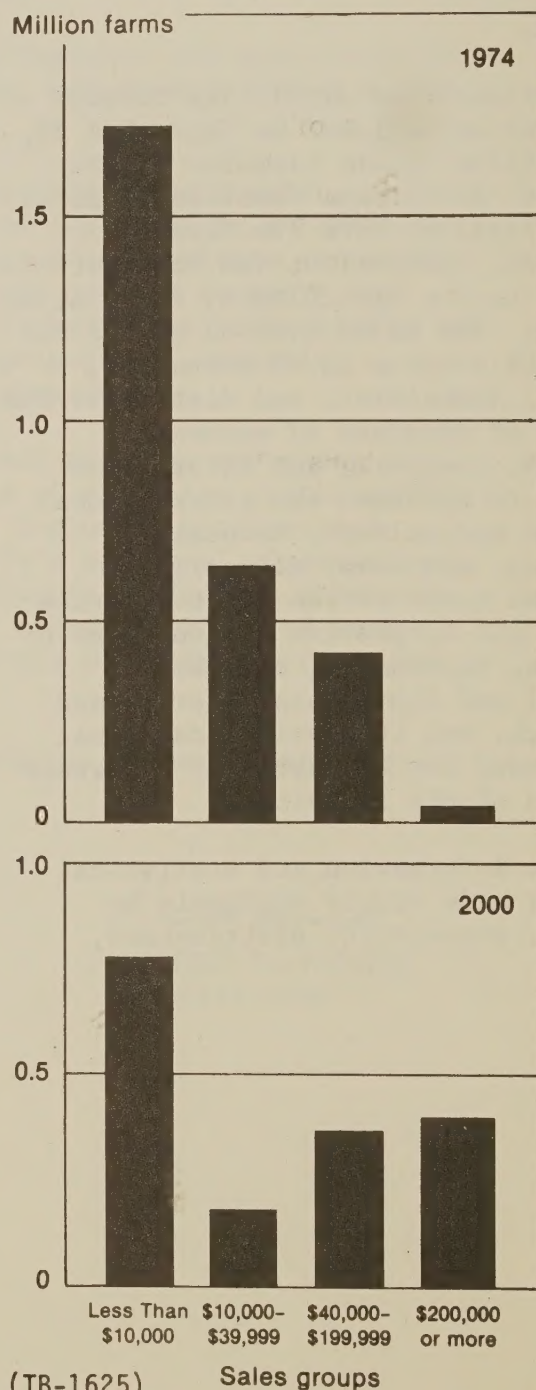
U.S. Farming Transformed. Changes in U.S. farming since World War II have transformed agriculture's resource organization and management. Changes in the size of farms, form of ownership, use of buildings and equipment, attitudes toward risk, and use of credit provided the main impetus. Significant changes in the distribution of income and wealth among farm people have accompanied the trend toward larger and fewer farms. Many forces have affected the way U.S. farms are organized and managed, seven being especially important: inflation; increases in agricultural exports; availability of new capital-intensive techniques; nonfarm employment opportunities; availability of credit for the purchase of land, buildings, and equipment; Federal Government support of farm product prices; and income and estate taxes. (AER-441)

#### Farm Size Expands, Numbers Decline.

Farms are becoming larger and fewer in number, and the average age of farmers is increasing. Only about half of the older farmers leaving farming are being replaced by younger farmers. Multiple ownership forms of business organization (combinations of one or more sole proprietorships, partnerships, or corporations) are becoming more common in farming.

Incorporated farms in particular, although still a very small percentage of all farms, have been increasing in number, but most corporate farms are family farms that incorporated to

### **Distribution of Farm Numbers by Sales: Actual 1974 and Projected for 2000**





## Program Results for 1980

achieve growth, tax, and inheritance benefits. Country buying stations and assembly point markets have dwindled as both large farmers and buyers have bypassed these traditional farm markets in favor of more direct marketing methods. That shift has hindered access to markets by smaller producers of some commodities. (AER-438)

Farm Income Down in 1980. Net farm income in 1980 was down 20 to 25 percent from 1979 as small increases in cash receipts did not offset a 10- to 12-percent rise in production expenses. The value of farm assets on January 1, 1980, was \$920 billion, up 14 percent from a year earlier. Farm debt outstanding rose from \$136.1 billion on January 1, 1979, to \$157.3 billion on January 1, 1980, an increase of 16 percent.

New Economic Indicators of the Farming Sector. An improved set of farm sector accounts was developed to indicate more accurately the economic status and productivity of the Nation's farms. Indicators of the economic status of the farm production sector and debts, assets, and returns on investments for individual farms will be assembled into one statement of accounts for the first time. These indicators are published along with the old farm accounts to allow for comparison.

Government Policies Encourage Farm Growth. Commodity policy, tax policy, and credit availability interact to favor rapid farm growth. The structure of the farming sector is also affected by other factors, like inflation and the allocation of research and development expenditures. Capital requirements are the major barrier to entry of new farmers. There is a notable lack of policy consensus on issues of land prices, ownership, and use.

Federal Tax Policies Influence Farm Structure. Federal income tax and estate tax policies strongly influence the structure of the U.S. agricultural sector. The cost accounting option, the current expensing of certain farm investments, and the deductibility of interest paid encourage farm expansion. Recent changes in corporate tax provisions encourage family farms to incorporate. Changes in inheritance taxes encourage continuity of farm ownership within families by providing a means to transfer ownership between generations, by allowing use valuation of farmland, and by extending payment of inheritance tax liabilities at low interest rates.

Commodity Programs Benefit Large Farms More. Ten percent of the participants in Federal farm programs received almost half the 1978 farm program payments while 50 percent (those with small units) received only 10 percent. Net benefits averaged more than \$44,000 for the largest participants. The proportion of payments received by the largest farms differed by commodity. The cotton program had the highest degree of concentration; the feed grain program was the most evenly dispersed.

About 0.2 percent of the participants were affected by payment limitations. Payments foregone because of the limits amounted to \$24 million, 1.2 percent of the total payments, which reached \$2 billion in 1978, the largest amount since 1973. The disproportional payments to large producers are due largely to the payments' being based on volume of production. About a third of all farmers participated in the 1978 programs, with the rate of participation higher for larger farms. Furthermore, the average farm size for program participants was larger than for nonparticipants. Less than 10 percent of the total acreage in the



1978 farm program was controlled by corporations. Only 0.2 percent of the enrolled acreage was on widely held corporate farms.

Higher commodity prices as a result of acreage controls increased returns to participants by about \$900 million, almost half the direct program payments. The programs probably raised farmland values, benefiting landowners and further contributing to the escalating capital requirements for beginning farmers--a barrier to entry.

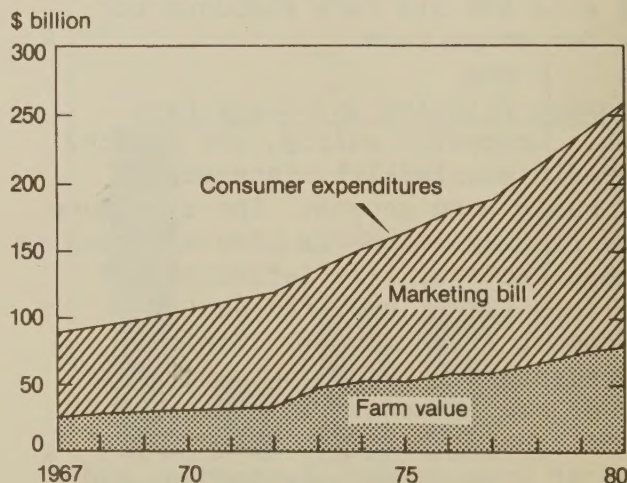
"Farmers' Newsletter" Demand Rising. Demand for the Farmers' Newsletters, initiated in fiscal 1978 under congressional authorization, grew substantially in fiscal 1979 and 1980. Six titles in the series (wheat, feedgrains, soybeans, livestock, cotton, and general) are mailed to farmers on request at no charge, to aid them in making production and marketing plans. The total mailing list reached 250,000 names by fiscal 1980, about double the total of a year earlier. Letter volume, estimated at 2.5 million pieces in fiscal 1980, is projected to grow further in fiscal 1981. Farmers' Newslne, a toll-free daily call-in telephone service offering a recorded message on the latest crop and livestock information, averaged about 3,000 calls per day.

Direct Marketing Increases. About 60,750 farmers (15 percent of the farmers in a six-State study) sold almost \$260 million of farm products direct to consumers in 1978. Higher farmer income and higher product prices were the leading reasons given for selling direct to consumers. Seventy percent of those direct-marketing farmers were part-time farmers with off-farm income. About three-fourths of the direct-marketing farmers had gross farm sales of less than \$20,000

during 1978. The leading methods, based on sales volume, of selling direct to consumers were farm stores, from the farmhouse or other farm buildings, roadside stands, pick-your-own, and farmers' markets. Approximately 75 percent of the direct-marketing farmers were located within 20 miles of the nearest population centers. The six States surveyed in this study were Indiana, Michigan, New Jersey, North Carolina, Ohio, and Pennsylvania. (AIB-436)

Marketing Spreads for Food Products Widened in 1980. Retail food prices in grocery stores were about 8 percent higher in 1980 than in 1979. Higher farm values for food commodities, up 6 percent, accounted for a fourth of the increase, and higher prices for fish and imported foods accounted for another fourth. The difference between what farmers receive and consumers pay for foods increased 9 percent in 1980. This increase in the farm-to-retail price spread accounted for about half the rise in retail grocery store prices. The increase in the price spread reflects increases in labor,

**Marketing Bill, Farm Value, and Expenditures for Farm Foods**

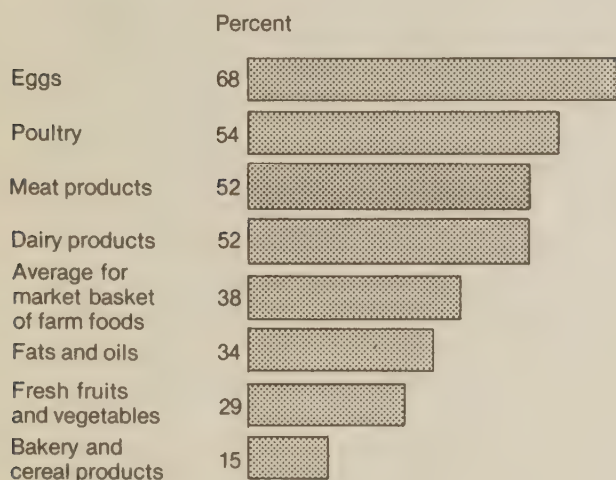


For domestic farm foods purchased by civilian consumers for consumption both at home and away from home. 1980 projected.



## Program Results for 1980

### Farm Share of Retail Food Prices



Based on the farm value or payment to farmers for the farm products equivalent to foods in the market basket and the retail cost. 1979 data.

packaging, energy, and other costs for food processing and marketing.

### New Food Marketing Cost Index

Developed. A new food marketing cost index is being used to explain and monitor the causes of food price inflation. The index measures changes in the prices of inputs and services used in processing, wholesaling, and distributing domestically produced foods. The index allows the sources of changes in food price spreads each month to be pinpointed. This is a major item in the monthly press release issued jointly by the Department of Agriculture and the Council on Wage and Price Stability. (TB-1633)

### Processed Food Prices Lag More Than

Fresh. Increases in the prices of highly processed foods are passed through to the consumer more slowly than increases in the prices for fresh foods. The average lag before higher farm prices show up at the retail level was found to range from about a week for eggs, poultry, and some fresh vegetables to more than 4 months for cereal and bakery products, processed fruits and vegetables, and fats and oils.

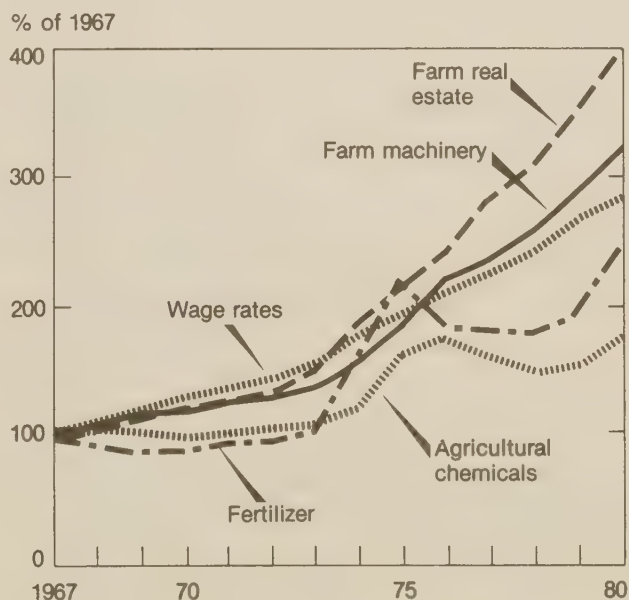
### Growing Concentration in Food Manufacturing Industry.

The 200 largest firms dominate food manufacturing and the drift toward increased concentration seems to be continuing. Since 1963, the number of food manufacturing firms declined, while mergers, industrial concentration, product differentiation, profitability, and product diversification all increased. Foreign investment is large and growing. (AER-451)

### Costs of Production Increase.

The 1978 nationwide survey of major crops was used to update estimates of production costs for 1977, 1978, and 1979 and projections for 1980. The 1980 projections were based on analysis of yield trends and current forecasts of input prices. The largest cost increases in 1980 were for fuel, fertilizer, and interest. Cost increases per unit of production were greater than increases in per-acre costs for most crops because yields were below the record-high levels of 1979. (Senate Committee Print)

### Prices of Selected Farm Inputs



Machinery includes tractors and self-propelled machinery. 1980 projected.

Soybean Production Costs Vary Widely by Region. Wide variations in soybean production costs (both land and nonland costs) were found among the major production regions. Variations in nonland costs were due to differences in regional yields, pesticide and insecticide use, and cultural practices. Soybeans were found to be a strong competitor for land with other crops, except tobacco and peanuts.

Gasohol Will Increase Corn Demand. Gasohol production is constrained in the short run by alcohol plant capacity. At high levels of alcohol production (2 billion gallons), corn consumption in the United States would increase by about 12 percent, corn exports would fall by about 5 percent, and corn stocks would fall by 15 to 20 percent. Corn prices would increase by about 12 percent. (AER-458)

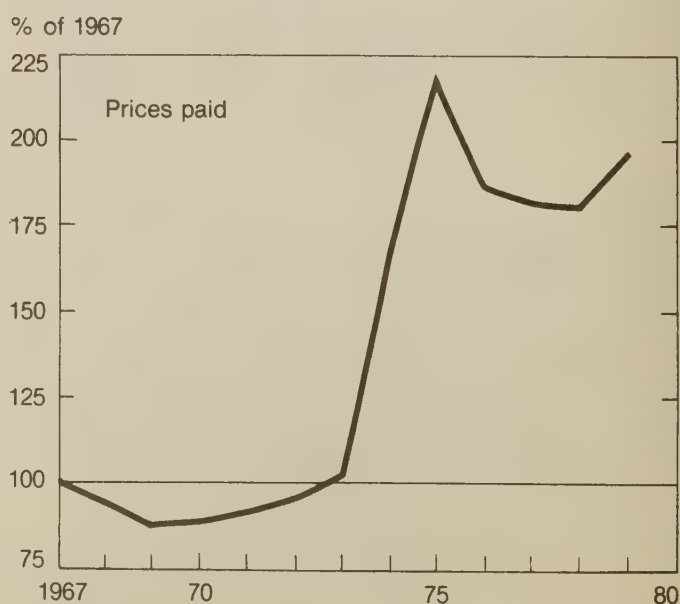
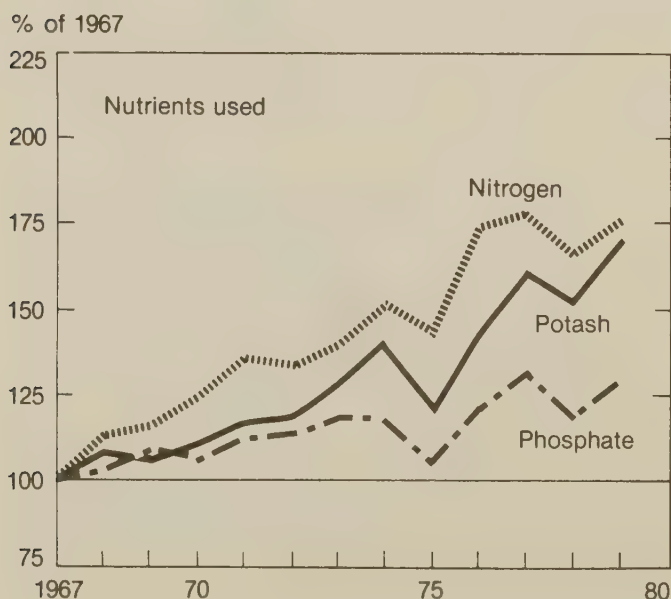
Solar-Powered Grain Drying Could Be Profitable. A solar-assisted combination grain drying system operating under optimum conditions could be 53 percent cheaper than a

comparable system run on fossil fuel. A solar-assisted system would have to be integrated into the planned harvest schedule for best results. Under the most favorable conditions, such a system would yield a 6.6-percent return on investment. Solar collectors, however, now costing more than \$10 per square foot, are not likely to be purchased with fossil fuel prices at their current levels. (AER-453)

Fertilizer Use Down, Prices Up in 1980. U.S. fertilizer use in 1979/80 declined between 1 and 3 percent. The decline was brought about by tight farm credit combined with increases in fertilizer prices (up to 26 percent) and higher prices of other inputs. Nitrogen and potash prices in 1980 averaged about 20 percent higher than in 1979; phosphate prices averaged a third higher.

Better Solutions Required For Agriculture's Transportation Needs. Railroads are the logical means for moving expected future increases in output of agricultural commodities, but

#### Fertilizer Used and Prices Paid





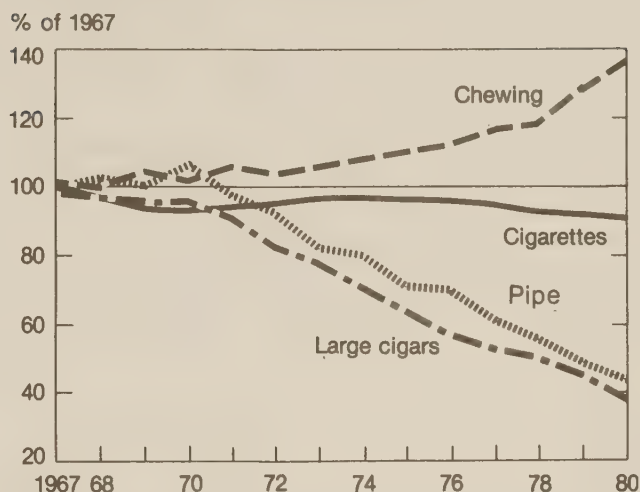
rail service is sometimes unreliable and improvements are needed. Truck service is flexible but more expensive than rail or barge for moving commodities over long distances. Until the waterways are improved, barges will be limited in their ability to move grain and other agricultural products. Much fresh produce transportation has shifted from rail to truck. Seasonality in produce shipments has declined, as has the potential for two-way hauls of fresh produce by truck.

Cost of Operating Refrigerated Trucks Rises. The cost per mile for a 10-truck fleet hauling fresh produce increased by 34 to 38 percent from 1976 to 1979, depending on trip distance and annual mileage. Owner-operators' costs were generally about 4 percent higher than fleet costs, despite owner-operators' lower management and maintenance costs. (ESCS-82)

Domestic Tobacco Use Projected to Decline. U.S. cigarette consumption in the eighties could remain about the same or could drop by as much as 13 percent due to a projected slowdown in the increase of the adult population and a rise in antismoking publicity and sentiment. Growth of cigarette exports would help moderate the decline in U.S. demand, but U.S. manufacturers' increasing preference for imported tobacco could reduce their domestic requirements by as much as 12 percent.

Burley Tobacco Production Still Labor Intensive As Production Costs Rise. Burley tobacco farms in five major production areas averaged about 25 acres of crops per farm in 1976--2.4 acres of tobacco and 23 acres of other crops. Burley tobacco remains a labor intensive crop: 342 hours of labor are used per acre. Without considerable consolidation of tobacco quotas, little harvest mechanization is anticipated.

## Consumption of Tobacco Products



Per male 18 years and over; except cigarettes, per person 18 years and over. 1979 preliminary, 1980 forecast.

Changing the method of packaging burley from tying it into bundles to baling offers the greatest potential for labor reductions. Growers can save an average of 5 cents per pound by baling tobacco. Buyers are concerned, however, that the United States might lose burley exports because of the higher risk of deterioration in quality and condition of baled burley tobacco, and that their costs of operation would increase. (AER-460)

Cotton Crop Production Systems Need Improvement. The average price of cotton tripled in the seventies, but cotton farmers in the Delta area were no better off financially if they used the usual input practices. There is a need for improved production systems including seedbed preparation and skip-row planting.

Centralized Supply Balancing Promising for Fluid Milk Markets. Substantial economies are possible when milk supply is balanced with fluid processors' demand for milk by a centrally coordinated supplier rather than by individual processors. A coordinated supply faces less variability, lower

cost, and a greater degree of supply assurance. The greatest potential for savings lies in manufacturing the reserve supply not needed by the fluid processors. With complete central supply balancing, however, processors in a market would be overly dependent upon a single source of milk. Central coordination, although ensuring an effective outlet at all times, reduces the outlets available for disposing of milk not needed by fluid processors.

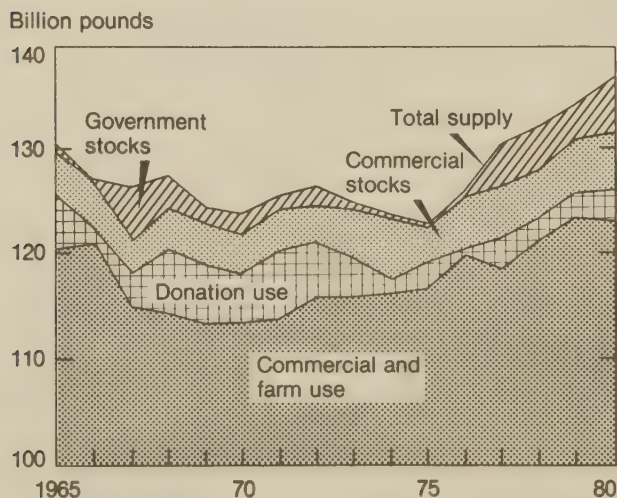
Fluid Milk Processors Hold the Line on Costs. Fluid milk processors, while making relatively heavy capital outlays, have been able to hold down unit costs in the face of rising input prices. Milk processing and wholesaling costs in 1979 would have been about 78 percent (24 cents per half gallon) higher than they actually were had unit costs kept pace with rising input prices. The only increase in the major cost per half-gallon of milk that came close to keeping pace with the wholesale price increases was that for containers.

Fluid milk processors have reduced retail deliveries and greatly expanded

wholesale marketing. The average volume of milk processed per plant tripled in the last 20 years, giving economies of scale. During 1960-79, wage rates for workers in the fluid milk industry almost doubled, yet average unit labor costs stayed about the same. In the same time, nonlabor costs increased by 72 percent per unit and wholesale prices for all goods and services rose by 162 percent. (ESCS-77)

Many Domestic Sugar Mills Close But Capacity Still Adequate. The number of beet sugar factories dropped from 72 to 44, while the number of raw sugar mills fell from 119 to 54 between 1950 and 1979. Despite those closures, the domestic sugar industry has the capacity to produce about 7.1 million tons of sugar annually, more than it has produced in recent years. Closures of raw mills and beet-slicing facilities can be expected to continue, but at a much slower rate than during the last 30 years. Closures should be confined to the older, smaller, less efficient cane operations, and for sugarbeets to areas where beet land competes with other cropland. Environmental protection requirements will also cause some plants to close.

#### Milk Supply, Use, and Stocks



Stocks as of December 31, 1980 forecast.

#### Corn Sweetener Use Grows Rapidly.

Nearly one out of four items in a typical supermarket has a corn product as an ingredient. Two of the most widely used products are corn syrups and dextrose, produced by 12 companies operating 21 plants, 12 of which produce high-fructose corn syrup (HFCS). Over the past decade, while U.S. per capita consumption of caloric sweeteners increased 7 percent, corn syrup consumption increased 89 percent, attributable almost exclusively to the rapid adoption of HFCS. Annual HFCS production has risen from zero in the late sixties to nearly 3 million tons now. Corn sweeteners captured one-third of the caloric sweetener



## Program Results for 1980

market in 1980, and are expected to capture an increasingly larger share.

Stiff Competition Between Sunflowers and Soybeans. U.S. sunflower production has increased dramatically in recent years and further expansion in sunflower acreage is expected on the fringe of present soybean- and corn-growing areas where yields of those crops are relatively low. Sunflowers are also displacing soybeans on double-cropped acreage because of sunflowers' shorter growing time and better performance under drought conditions. In the future, sunflowers will exert more pressure on soybeans in their competition for acreage because sunflower yields will be increasing faster than soybean yields both in oil content and production per acre.

Markets Expand for Fats and Oils. World production of edible fats and oils grew by 27 percent over the last 7 years from 37 million to 47 million metric tons; soybean oil production increased from 10 to 26 percent of the total. Palm, sunflower, and rapeseed oils were also major contributors to the growth in world production. Industrial oils did not grow as fast as edible oils.

Rice Distribution Up. Distribution of U.S. rice for all major uses reached record levels in 1978/79. Domestic distribution of 27.1 million hundredweight (cwt) was up from the 20.4 million cwt in 1975/76. Domestic use for direct food, processed foods, and beer reached 15.2 million cwt, 3.7 million cwt, and 8.2 million cwt, respectively, in 1978/79. The record food use pushed U.S. per capita consumption to 6.9 pounds, compared with 5.2 pounds in 1975/76.

Potato Futures Market Effectiveness Declines. A decline in deliverable supplies of acceptable potatoes from

Maine was a primary factor in the deterioration of the hedging potential since the sixties, and a cause of the increasing congestion of the market as contracts approach maturity. This resulted in price distortions. Cash settlements seem to hold some promise for alleviating the basic difficulties. The study was requested by Congress and used by the Commodity Futures Trading Commission for its analysis of the performance of potato futures and the rules governing such trading.

Increased Wages Will Raise U.S. Lettuce Prices. U.S. lettuce production is expected to increase moderately from about 1.5 million pounds per quarter in 1979 to about 1.6 million pounds per quarter by 1983. Consumption follows a similar trend from 1.4 million pounds per quarter in 1979 to 1.5 million pounds per quarter in 1983. The difference between consumption and production is accounted for by exports, principally to Canada. Over the same period, prices will rise from the \$8 to \$9 per hundredweight range in 1979 to \$10 to \$11 in 1983. If the 40-percent increase in wages in 1979 were accompanied by 7-percent annual increases in the following years, the lettuce price would rise by about 7 percent more, while returns to growers would rise by 6.5 to 7.2 percent. The bulk of increased costs would, therefore, be passed on to marketing firms and consumers.

Mechanized Harvesting Up for Vegetables, Nuts; Still Low for Fruits. Mechanized harvest of vegetables for processing reached 100 percent in 1978 for snap beans, carrots, sweet corn, onions, green peas, and potatoes. About 95 percent of the processing tomato crop was mechanically harvested, while all fresh tomatoes were harvested by hand. Mechanical harvesting is used for

nearly all fresh carrots and fresh potatoes. Essentially no fresh fruit was machine harvested in 1978. No fruits for processing exceeded 25-percent machine harvesting except prunes (100 percent) and tart cherries (75 percent). Some form of mechanization was used to harvest about 90 percent of the tree nuts.

Expanded Food and Nutrition Program Effective. Historical and statistical profiles were produced to aid in administering the Expanded Food and Nutrition Education Program. Despite constant dollar funding in recent years, the food assistance programs have continued to improve family food habits, to involve homemakers in learning sessions, and to locate and work with an appropriate target population.

Food Labeling Misunderstood. Proposed net weight labeling regulations for meat and poultry products are grossly misunderstood by consumers and producers. The amount of meat available for sale would not change under the proposed rule, and the cost to consumers for the usable product would remain unchanged, but the labeled price per pound would probably increase. (AER-443)

Most shoppers need and want food labeling and other shopping aids, according to national surveys conducted in 1976 and 1977. Open dating and individually priced food packages are especially wanted. Shoppers also want food storing instructions, nutritional data, and prethaw information on frozen foods. Shoppers in large households and those with children are most interested in the shopping aids. Men, the elderly, and the less educated are least interested in labeling information.

Labeling that lists the food's ingredients in order of predominance is

expected to be one of the more expensive items. Its cost is projected to range between \$93 million and \$233 million for 465,000 meat and poultry product labels, under proposals by USDA, the Food and Drug Administration, and the Federal Trade Commission to change the information required on food labels.

Open Dating of Food Not Uniform. The types of foods using open dating, the shelf life periods allowed, and the manner of presenting the data all vary widely among the requirements of the Federal Government, several States, and the practices of six large regional food-retailing chainstores. Uniformity will depend on the development of a nationwide system.

Concentration in Grocery Retailing Leveling Off. The largest four grocery store chains in each U.S. metro area increased their combined market share from 45.4 percent in 1954 to 52.4 percent in 1972. Market shares of 60 percent or more were found in a fourth of the U.S. metro areas in 1972. That upward trend in food retailing concentration may be leveling off, however. In 1980, the 20 leading food chains accounted for about 37 percent of total grocery store sales--unchanged since 1972. Medium-size chains have the lowest margins, expenses, and retail prices. Supermarkets in Washington, D.C., reduced their prices when limited assortment grocery stores (no-frill or "box" stores) began operating in their market areas. Box store prices averaged 20 to 30 percent lower than prices for comparable items at conventional supermarkets. Prices of the two leading chains dropped by 2 to 4 percent citywide and advertising increased substantially.

Large Grocery Products Brokers More Efficient. Brokers who specialize in grocery products can take advantage of



economies of size: larger brokers are more efficient and charge lower prices for their services than smaller brokers. The grocery products brokerage industry is not highly concentrated.

## International Trade and Development

Work in the international agricultural trade area involves: world demand, supply, and forecasting; international agricultural, economic, and trade policies; and country and regional situation and outlook, analysis, and research. Some of the significant results in fiscal 1980 follow.

### World Food Production Down; Slow Growth Expected:

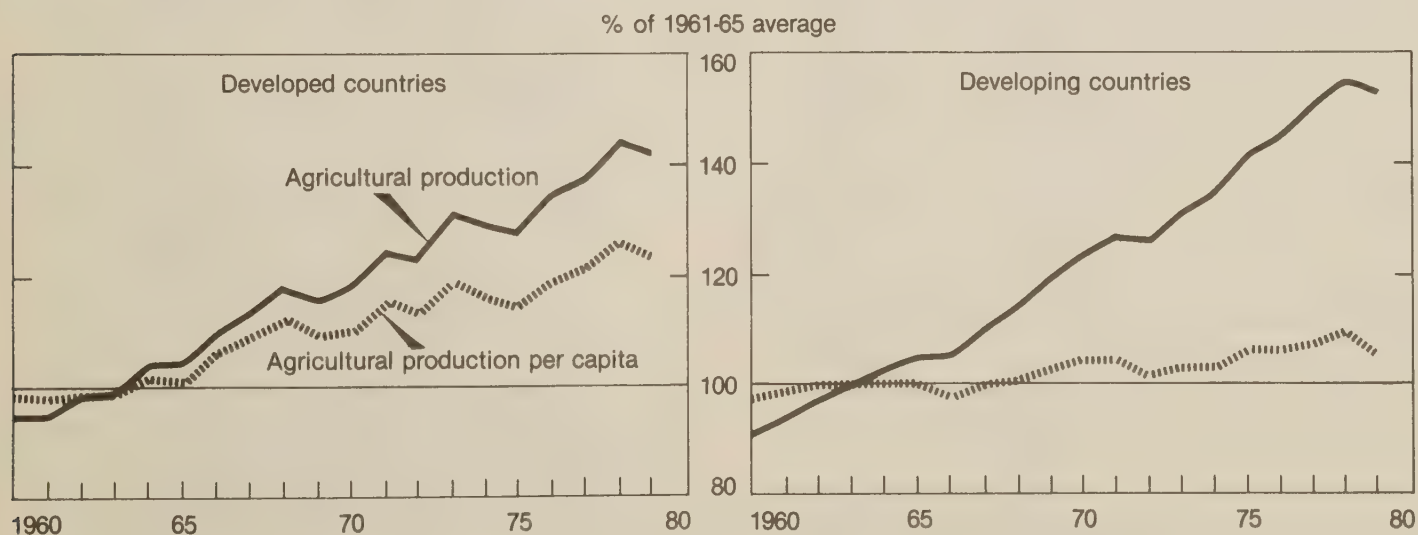
World food production was expected to decline in 1980 after the 2.5 percent decline in 1979 (3.5 percent per capita), which was the first decline in 7 years. World food consumption is not likely to fall in 1981, however, due to ample food stocks. The decline was concentrated in the developed countries and was

primarily caused by poor harvests in the USSR and Eastern Europe. Total agricultural production in developing countries declined only slightly, but per capita production there fell 4 percent because of continued rapid population growth.

Although world grain production in 1980/81 is forecast to equal the previous year's 1.3 billion tons, cereal supplies have tightened in the face of increased demand, primarily due to the large Soviet crop shortfall. Much of the pressure on world grain supplies comes from the feed-livestock sector. While the combined world production of coarse grains and oilseeds was expected to decline about 4 percent in 1980, world production of food grains--wheat and milled rice--was forecast to increase about 2.5 percent and be adequate to meet regular consumption and trade requirements in 1980/81.

World rice exports were expected to be maintained at the previous year's level, and rice stocks are expected to grow 4 percent. Wheat supplies--the

## Changes in World Agricultural Production



Developed countries include the United States, Canada, Europe, USSR, Japan, Republic of South Africa, Australia, and New Zealand. Developing countries include South and Central America, Africa (except Republic of South Africa), and Asia (except Japan and Communist Asia).

grain of greatest strategic importance in meeting short-term food deficits around the globe--were expected to be sufficient to support a 4.6 million-ton increase in world wheat trade above the 1979/80 level. Total grain stocks as a percentage of utilization are expected to fall to around 10.5 percent, about the same as the low point in the midseventies. In addition, world wheat stocks may fall to a percentage of consumption somewhat lower than in the food-shortage years in the midseventies.

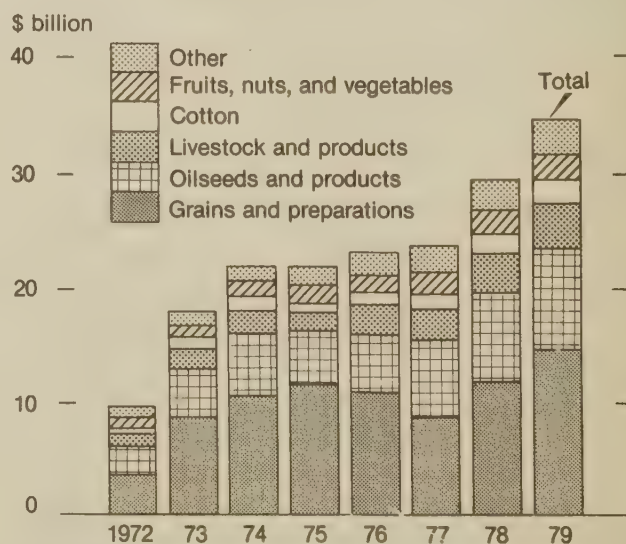
Projecting most likely developments to the mideighties, world demand will probably be sluggish for the next 2 to 3 years and will then start to pick up. Growth in world wheat production is likely to slow to about 2.5 percent annually, well below the growth rates of the fifties and sixties. World coarse grain production, however, will increase by about 3 percent annually through 1985/86, compared with 2.5 percent in the seventies. Rising incomes and population growth in the developing countries will increase the demand for wheat, of which quantities demanded and supplied will be about in balance by 1986. Consumption of coarse grain will increase the most in the developing countries. World trade will increase faster for coarse grain than for wheat, and U.S. coarse grain and wheat exports are expected to increase by 6 percent and 2 percent, respectively, annually through the mideighties.

World rice production is not expected to increase as rapidly as demand. Thus, foreign demand for U.S. rice will raise U.S. prices and encourage U.S. production. World oilmeal demand is likely to increase by 3 percent annually for the next 5 years, compared with a 4-percent annual increase in the latter half of the seventies. Much of the increase in foreign demand will be

accounted for by increased production in the Southern Hemisphere. U.S. oilseed exports will probably increase by only 2 percent annually by 1986. U.S. cotton exports are projected to average 7 million bales annually during the first half of the eighties, primarily a result of continued growth in foreign consumption, especially in China and East Asia.

U.S. Agricultural Exports Expand. The value of U.S. farm products exported increased by 27 percent to \$40.5 billion during fiscal 1980, and the agricultural trade surplus advanced to \$23 billion. Twelve countries imported over \$1 billion in U.S. farm products each in fiscal year 1979, compared with eight billion-dollar markets in fiscal 1979. Fifty countries took more than 90 percent of all U.S. agricultural exports in fiscal 1980. Over half of the U.S.-produced wheat, rice, soybeans, sunflower seeds, cotton, and almonds was exported in fiscal 1979. Other farm products with significant proportions exported were feed grains, tobacco, dried beans, hides, and tallow.

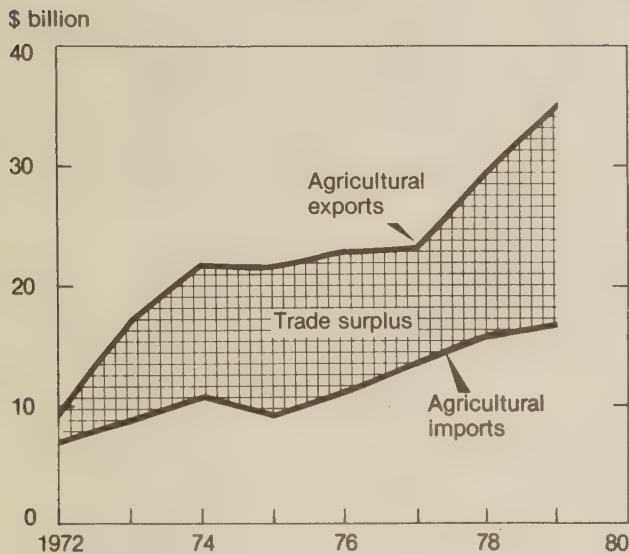
Value of U.S. Agricultural Exports by Commodity



1979 preliminary.



### U.S. Agricultural Trade Balance



Agricultural exports in fiscal 1979 took the production from 116 million acres, 1 out of 3 acres cultivated. Every State except Alaska shared in the fiscal 1979 export gain. Soybeans and soybean products ranked first in value among export commodities, at about \$8 billion. Illinois, Iowa, Missouri, Minnesota, and Indiana were the leading producers. Feed grain and product exports totaled \$7 billion, with Illinois, Iowa, Nebraska, and Indiana accounting for over half the sales. Wheat and wheat product exports approached \$4.9 billion, attributed mainly to Kansas, North Dakota, Oklahoma, Montana, and Washington. Cotton was exported principally by Texas, California, Mississippi, Arizona, and Arkansas.

Government-financed agricultural exports went to over 70 countries during 1979, but 15 countries took most of the total. U.S. agricultural exports under Public Law 480 rose to \$1.2 billion in fiscal 1979, 10 percent above the 1978 value. A decline in disbursements under AID programs, however, more than offset the value gain in P.L. 480 shipments.

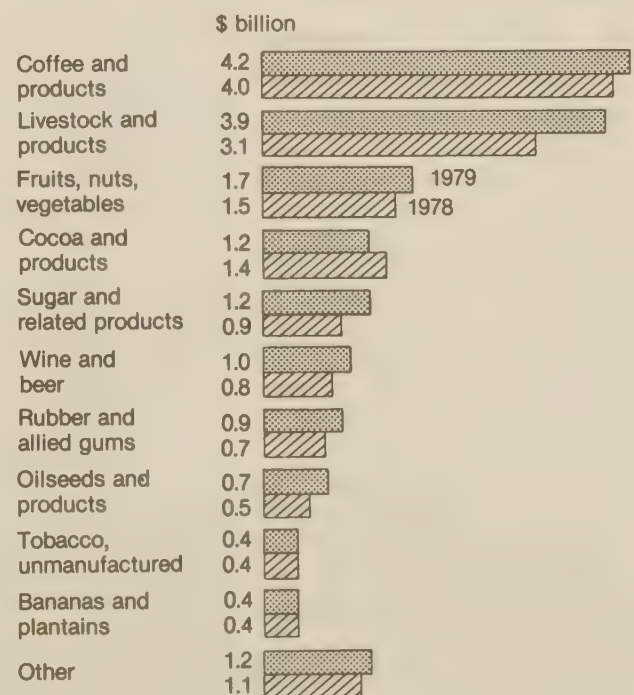
Commodity Credit Corporation (CCC) credit sales of \$1.5 billion in fiscal 1979 were slightly below the previous year's record but more than double the fiscal 1977 level. The CCC credit sales program assisted exports to Korea, Poland, Portugal, Pakistan, and other smaller markets.

### U.S. Agricultural Imports Rise.

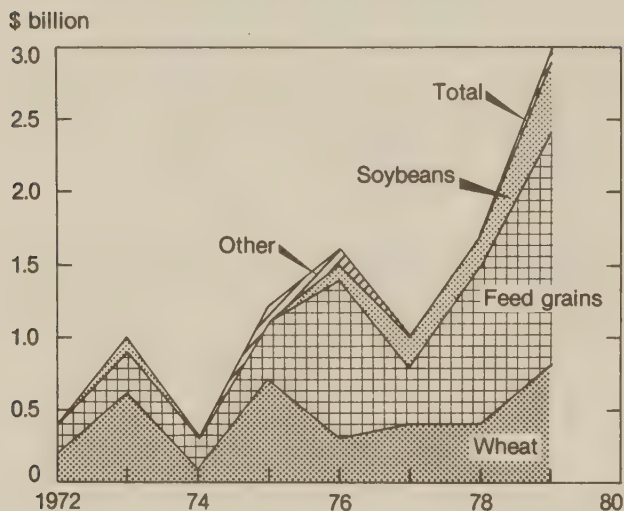
Agricultural imports reached a record \$17.3 billion in fiscal 1980, 7 percent higher than in 1979. The value of all major imports rose, except for cocoa, rubber, hides, meat, and fruits. Fiscal 1980 imports of all agricultural products are expected to increase by about 11 percent to \$18 billion. Value increases are expected in sugar, meats, fruits, vegetables, coffee, and rubber.

U.S. Sales Suspension Impedes USSR Livestock Plans. The suspension of agricultural sales to the Soviet Union aggravated the USSR's already-tight

### Value of U.S. Agricultural Imports by Commodity



## U.S. Agricultural Exports to the Soviet Union



Adjusted for transshipments through Canada.

1980 feed situation, and was forecast to worsen the supply shortages it faced in 1981 as a result of poor harvests in 1979 and 1980.

The Soviet Union attempted to counter the effects of the suspension in 1980 by drawing down grain stocks, more aggressive import marketing, slaughtering lighter animals, and slowing growth in livestock inventories. Meat production in 1980 was estimated to be down by 2 percent as a direct result of the suspension. The impact of the suspension in 1981 is expected to be more pronounced. With USSR stocks lower and the supplies of grain available on the world market forecast to be less than in 1980, more of the USSR adjustment to limited sales from the United States will have to be borne domestically by the feed-livestock sector.

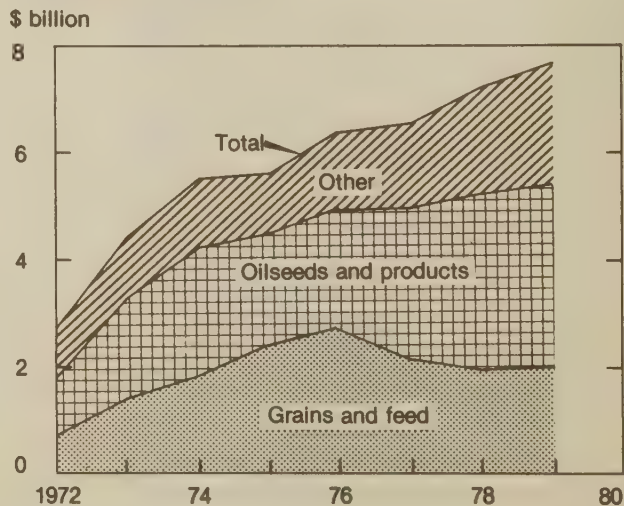
By June, western correspondents in the USSR reported widespread shortages of meat and dairy products, particularly in rural areas. By the end of the summer, meat production was 3 percent below 1979 levels. While only part of the poor livestock situation can be

attributed to the U.S. sales suspension, the cutoff of U.S. feedstuffs made it impossible for the USSR to realize even the scaled-back goal of maintaining (rather than expanding) livestock production, as announced in October 1979.

Diminished U.S. Export Prospects to the European Community. The expected admittance of Greece, Spain, and Portugal to the EC in the early eighties could significantly improve the level of agricultural self-sufficiency for the EC and affect its agricultural trade. U.S. agricultural exports to the current EC members totaled \$7.7 billion in 1979 and exports to the three applicant countries totaled \$1.6 billion.

As a consequence of admittance of the three new members, U.S. exports to the EC of citrus fruits, other fresh and processed fruits and vegetables, nuts, and edible oils could decline. In addition, the three applicant countries have the capability of increasing production of durum wheat, barley, rice, tobacco, and cotton, which, if accomplished, would offer increased

## U.S. Agricultural Exports to the European Community



Not adjusted for transshipments.



competition to current U.S. suppliers. The applicant countries will benefit from higher price supports for most commodities, free access to markets, and subsidized exports to non-EC countries. In particular, Spain has the potential to expand its agricultural production significantly.

Import duties imposed under the EC's common agricultural policy averaged 85 percent of the c.i.f. price for grain in the 1979/80 marketing year, effectively insulating EC farmers from world grain price fluctuations and preventing efficient grain producers, like the United States, from selling more grain to the EC. Proposals by the EC to impose import restrictions on cassava, if implemented, would adversely affect U.S. soybean and soybean meal exports to the EC because soybean meal must be mixed with cassava to make cassava an acceptable feed grain substitute.

#### Feed Concentrate Use Down In the EC.

The use of feed concentrates in EC countries varies greatly by livestock class and country. The quantity of concentrates required to produce a liter of milk or a kilogram of meat or eggs declined significantly over the seventies; comparable declines in the eighties, however, are unlikely with the limited technical and genetic breakthroughs now foreseen. Thus, while the ingredients used in feed concentrates may vary somewhat, the volume of feed concentrates used will depend on trends in livestock production.

#### Western European Agriculture Changes.

The market for U.S. exports is significantly affected by changes in the structure and performance of Western European agriculture. Despite increases in total agricultural production in all Western European countries during the last decade,

agriculture's relative contribution to the total gross product declined. A larger agricultural product has been produced on a steadily declining agricultural land area and with a smaller labor force. Yields have generally increased and greater productivity has been realized per unit of labor and land. Average farm size is increasing as the number of farms decline, but average farm size remains small compared with that of the United States.

Both national and EC structural policies have previously called for larger and more economically viable full-time farms. However, the effectiveness of such policies has been limited by meager financial resources, high land prices, and more recently by the general economic slowdown that has limited nonfarm employment opportunities. Conflicts between structural change and environmental, social, and economic objectives appear to be causing some reevaluation of the desirability of policies that encourage or allow very large or industrial-type farms.

Norway First in Europe with Nutrition and Food Policy. Norway is the first country in Western Europe to adopt a comprehensive nutrition and food policy to encourage healthy eating habits and increase national self-sufficiency in food production. Increased self-sufficiency is projected, largely based on greater domestic production of grains and potatoes and expanded use of land in economically poor areas. U.S. exports of grains and oilseeds to Norway would likely decline if Norway succeeds in increasing domestic production of food grains from 7 percent of total consumption in 1974 to the goal of 28 percent in 1990, and simultaneously succeeds in increasing the ratio of domestically produced feeds to imported feeds. (FAER-157)

Eastern Europe's Feed Requirement Outstrips Production. A serious imbalance between domestic feed production and demand has caused Eastern Europe to become increasingly dependent on imported grains and protein meal. As a result, the region will probably remain a strong market for U.S. feedstuffs, especially feed grains, soybeans, and soybean meal, despite East European planners' efforts to correct the imbalance by increasing grain, oilseed, and forage output, while decelerating the growth in livestock numbers.

U.S.-Mexican Farm Trade Sets Record. U.S. farm product exports to Mexico reached a new high in 1979 of \$1 billion; U.S. agricultural imports from Mexico likewise set a record at \$1.2 billion. Wheat, coarse grains, and oilseeds were the most important commodities exported; coffee and fresh vegetables were the main imports.

Mexico's concern about its ability to produce basic foods, and the Mexican perception of increased use of food as a political weapon have encouraged development of its agricultural sector. The main effects on trade, however, will be limited to lower corn imports and increased imports of sorghum.

Competition from Mexican Fresh Winter Vegetables. Mexican growers can raise fresh tomatoes, green peppers, cucumbers, and eggplant more cheaply than Florida growers, but U.S. import fees cause Mexico's total cost in the U.S. market to exceed Florida's for all four vegetables. The total cost of growing, harvesting, packing, and selling Mexican tomatoes in the 1978/79 season was \$4.39 per 30-pound package versus \$5.74 in Dade County, Florida, and \$5.59 in southwest Florida. Delivery of Mexican tomatoes to, and crossing, the U.S. border, however,

added \$1.36, giving a total cost of \$5.75 per package delivered to Nogales, Arizona--slightly higher than the total Florida cost. The pattern for the other vegetables was much the same; Mexico's costs at the packing house were lower, but Florida had a total cost advantage when the export costs were added. (ESCS-72)

Fresh tomato producers in Baja California, Mexico, have higher total costs than California producers, but the higher price commanded by Baja-produced tomatoes in the U.S. market offsets Baja's cost disadvantage. Higher costs and risks, however, combine to make unlikely much future expansion of fresh tomato imports from Baja California. (ESCS-78)

Tomato Import Tariff Effective. The tariff on fresh tomatoes imported from Mexico has remained unchanged since 1951. The duty paid as a percentage of value of tomato imports declined from 12.1 percent to 8.5 percent during 1969-79 because of a rise in the average price paid for tomatoes. With the present tariff, per capita consumption of fresh winter tomatoes in the United States rose during the seventies and should continue rising by about 0.09 pound per year, from 5.4 pounds in 1979 to 5.9 pounds in 1985.

Doubling the tariff on fresh tomatoes from its present level would reduce Mexican fresh tomato imports by about 35 million pounds by 1985, while Florida's production would rise by 12 million pounds. Projected U.S. per capita fresh tomato consumption would decline by 0.1 pound, from 5.9 to 5.8. Doubling the tariff would also raise U.S. retail prices by 0.5 cent per pound by 1985 while reducing Mexican growers' net price by 1.6 cents per pound and increasing Florida growers' receipts by 0.6 cent per pound for the tomatoes. Eliminating the tariff would



## Program Results for 1980

change prices by about the same amount in the opposite direction.

Canadian Production Affects U.S. Exports. Price changes for U.S. wheat have relatively little effect on Canadian exports of wheat to third countries. If the Canadian statutory rail freight rate were increased to reflect the true cost of transporting grain, Canadian wheat exports would decline by approximately 1.6 million metric tons within a year.

Canada is the world's leading producer and exporter of rapeseed, after having increased rapeseed production by approximately 360 percent from 1969 to 1978. Continuing increases in rapeseed production in Canada may adversely affect U.S. soybean exports. If Canadian rapeseed exports are constrained by either transportation problems or limited terminal capacity, Canada will probably increase its domestic use of rapeseed at the expense of U.S. soybean imports. If such problems do not occur, however, Canadian rapeseed may become increasingly competitive with U.S. oilseed exports, particularly to Japan.

Canadian and U.S. Farm Sectors' Changes are Similar. Farming in both the United States and Canada has undergone dramatic changes since World War II. About 4.5 percent of Canadians live on farms, compared with 3.5 percent of Americans. The averages, however, fail to convey the wide range among States (from 0.4 percent in Rhode Island to 26 percent in South Dakota), and among Provinces (from 0.3 percent in Newfoundland to 21 percent in Saskatchewan). In both countries, the number of farms reached a peak in the thirties, while farm size grew rather steadily from then until now. Tenancy in the United States has fallen sharply from the early fifties, when 25 percent of U.S. farmers were tenants, down to

approximately 10 percent now. Canadian tenancy ranged between 5 and 7 percent throughout the same period.

Reduction in Sugar Import Duty Has Little Effect. The President's reduction of the sugar import duty to the legal minimum (0.625 cent per pound) on February 1, 1980, is projected to have little effect on quantities produced, imported, or consumed. Consumers will save about \$464 million, while Government revenue losses will be about \$260 million.

Global Food Needs Greater in 1980. An annual global food assessment, which provides information for P.L. 480 food aid decisions, finds that 27 of 79 low- and middle-income countries had larger concessional food aid needs in 1980 than in 1979. In most of these countries, declines in food production and increasingly difficult economic conditions presage serious food problems. Globally, concessional food aid needs in 1980 were not only larger than in 1979, but several times larger than the 7.6 million tons pledged by developed countries under the new Food Aid Convention signed in 1980. (FAER-159)

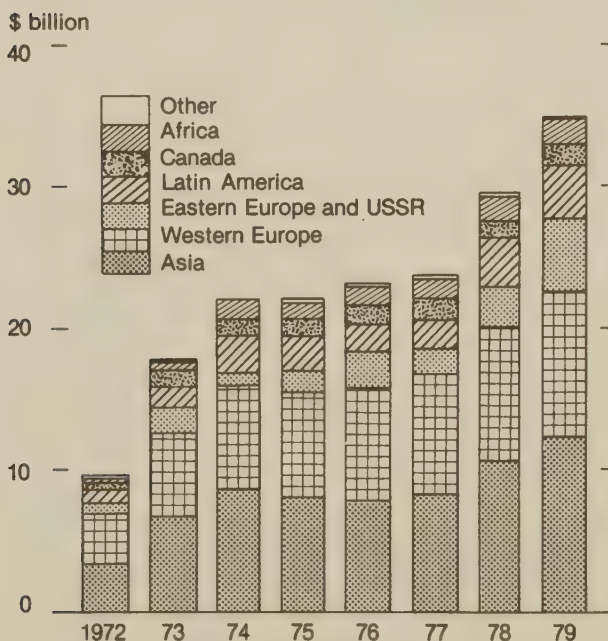
Hunger Programs Need Focus. A study of attempts to measure the extent of world hunger and malnutrition indicates that data limitations reduce the reliability and usefulness of global estimates of unmet food needs. Analytical studies and resources should focus on those countries with adequate data and in the greatest need from the standpoint of food production, population pressure, and unemployment.

Petroleum Will Remain Important to World Agriculture. Petroleum accounts for over 50 percent of world commercial energy use and is likely to remain the leading energy source for at least

another two decades. High petroleum prices have not seriously affected overall food production or trade levels, but have aggravated the balance of payments situation of petroleum importers. The petroleum import bill of developing countries increased from \$2 billion in 1970 to \$53 billion in 1980 (current dollars). The price of petroleum is projected to double in real terms by 1990 and may triple by the end of the century.

U.S. Exports to Africa and the Middle East Slow. U.S. agricultural exports to Africa and the Middle East increased only 2 percent in value during 1979, following a 460-percent increase between 1973 and 1978. The U.S. share of total agricultural imports by Africa and the Middle East declined from 16 percent in 1978 to about 13 percent in 1979. Cereals and cereal products accounted for about 53 percent of U.S. agricultural exports to the region in 1979.

**Value of U.S. Agricultural Exports by Destination**



Adjusted for transshipments through Canada.

Agricultural exports to Iran fell from \$493 million in 1978 to \$415 million in 1979 and virtually no direct shipments were recorded in 1980. Gains in U.S. exports of rice, frozen poultry, and feed grains to Arab oil-exporting countries in 1980 plus larger sales of wheat, tallow, tobacco, and corn to Egypt should more than offset the loss of Iran.

Sub-Saharan Africa Population Growth Outstrips Food Production. Sub-Saharan Africa is the only region in the world where per capita food production is below what it was 20 years ago. Total food production increased slightly, while the population growth rate accelerated and is now the highest of any region in the world.

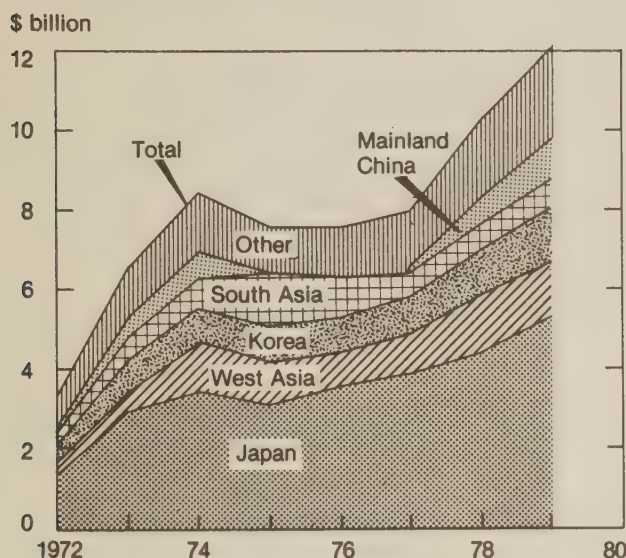
Chronic nutritional deficiencies and low rural incomes persist throughout the region. Food imports tripled in volume between 1960 and 1979, while the cost of those imports rose almost ninefold. Most of the region's countries cannot afford such imports.

U.S. Feed Exports to Japan Will Rise. Changes in consumption and production of agricultural products in Japan, in part induced by policy changes, will significantly increase U.S. grain and oilseed exports to Japan. Many coastal nations' adoption of a 200-mile fishery zone has caused Japan's fish supplies to level off and fish prices to increase at a faster rate than meat prices.

The impact of higher fish prices relative to meat prices on consumption of fish and meat, the efforts of the Japanese livestock industry to increase the supplies of meats, and the resulting increase in derived demand for feed grains and oilseeds should increase U.S. exports. But Japanese domestic disposal of rice through its



### U.S. Agricultural Exports to Asia



use as a feed will also satisfy some of the increased demand for feed.

India's Food Supplies Tight Following 1979 Drought. India may be in the market for U.S. wheat during 1981 for the first time since 1977. Below average rainfall in the monsoon season caused India's agricultural output during 1979/80 to decline by 14 percent. Production of all major food commodities was affected. An 18-million-ton decline in rice, wheat, and coarse grain output was met by drawing from large Government and private stocks during 1980. While rice stocks remained at comfortable levels, wheat stocks were severely depleted by late 1980. The shortfall in oilseed and sugarcane production led the Indian Government in 1980 to restrict peanut and sugar exports, to increase vegetable oil imports, and, for the first time, to import sugar.

Irrigation Policies Needed in Asian Countries. Water development policies in south and southeast Asia have to be oriented not only toward developing new water supplies but also toward greatly

increasing the efficiency of use for the presently used water, including the proper removal of surplus water. Flooding, waterlogging, and salinity restrict agricultural production in many areas that would otherwise be highly productive. The cost of irrigation can be met only by increasing productivity--achieving high yields for high-value crops like rice, sugarcane, cotton, fruits, and vegetables.

### Natural Resources and the Environment

Work underway in the natural resources and environment area involves: landownership and use; energy development impacts; water use and conservation; resource planning; pesticide regulation and management; and water quality. Some of the significant results in fiscal 1980 follow.

Foreign Ownership of U.S. Agricultural Land Is Not Extensive. Nationally, the amount of foreign ownership is 5.6 million acres--less than 0.5 percent of all privately owned U.S. agricultural land--and unlikely to have a significant impact, except in a few areas of concentrated ownership in the South. Alabama, Florida, Georgia, North Carolina, South Carolina, Tennessee, and Texas account for 32 percent of all foreign-owned acreage. Investors from Canada, the Netherlands Antilles, the Federal Republic of Germany, the Netherlands, Luxembourg, and the United Kingdom held 81 percent of all foreign-owned land as of February 1, 1980. U.S. entities with at least 5-percent foreign ownership held 54 percent of the foreign-held agricultural land. Forty-six percent of foreign-held agricultural land is forestland. (AER-447)

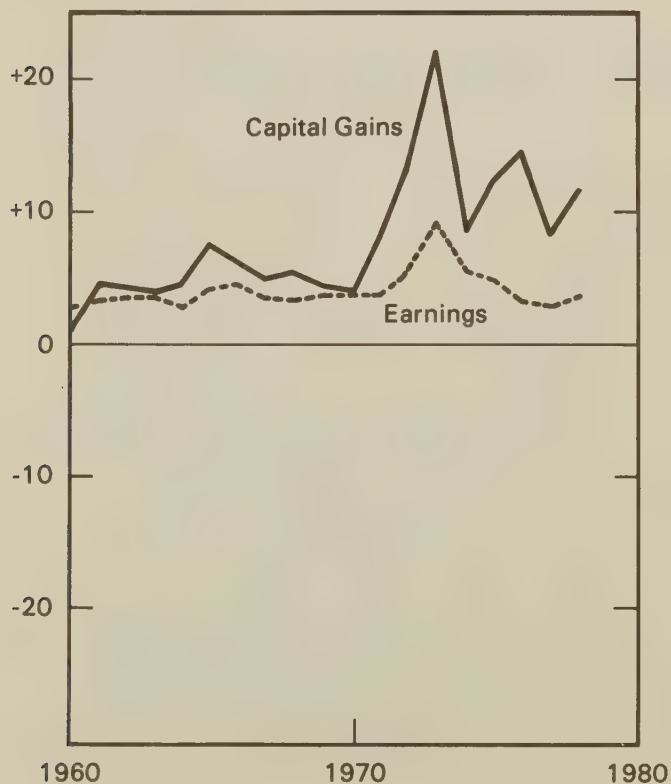
Farmland Investment Better Than Common Stocks. Investing in farmland and leasing it out on a cash basis yields returns (annual income and asset appreciation) that exceed stock investments in the long run; in the short run, either type of investment may be better.

From 1940 to 1979, the Standard & Poor Index for 500 common stocks yielded an annual rate of return of 10.7 percent. During the same period, yields from farmland investments (including appreciation) were nearly equal or better: 9.5 percent in central Kansas, 10.7 percent in central Illinois, 13.5 percent in Montana, and 17.9 percent in northwest Mississippi.

U.S. Farmland Owned Largely By Individuals and Families. About 85 percent of the 938 million acres of privately owned farm and ranch land in the United States was held by individuals, family partnerships, and family corporations in 1978. Farmers (26 percent of the owners) held 57 percent of the noncorporate privately owned land. Slightly less than 4 percent was held by nonfamily corporations, which represents 1 percent of the owners. White collar and blue collar workers (44 percent of the noncorporate owners) held 22 percent of the farm and ranch land. Retired people accounted for 24 percent of owners and held 17 percent of the acreage.

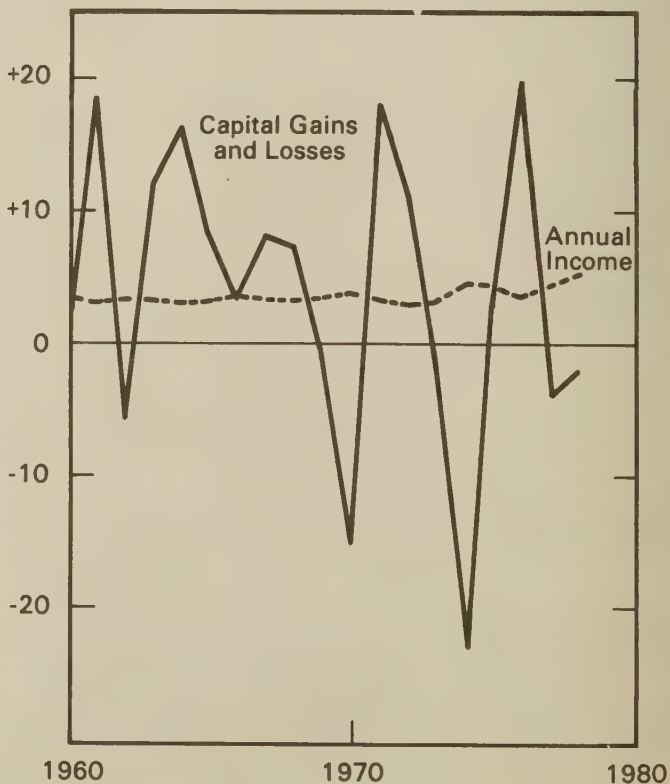
## Farm Returns

Percent



## Common Stock Returns

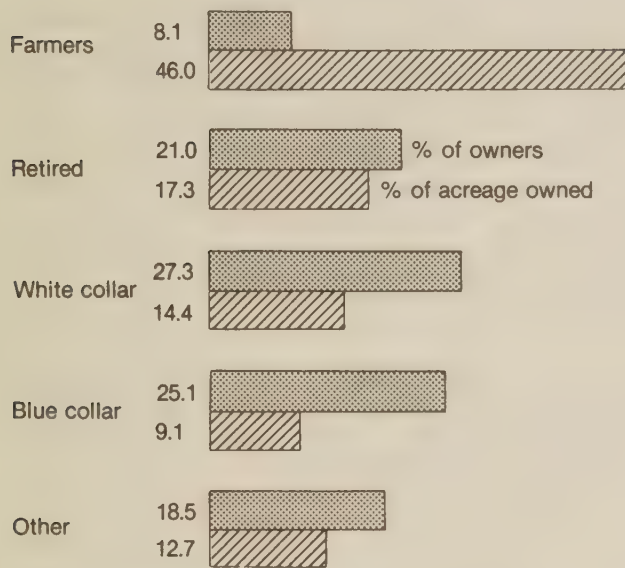
Percent





## Program Results for 1980

### Occupation of Owners of Rural Land

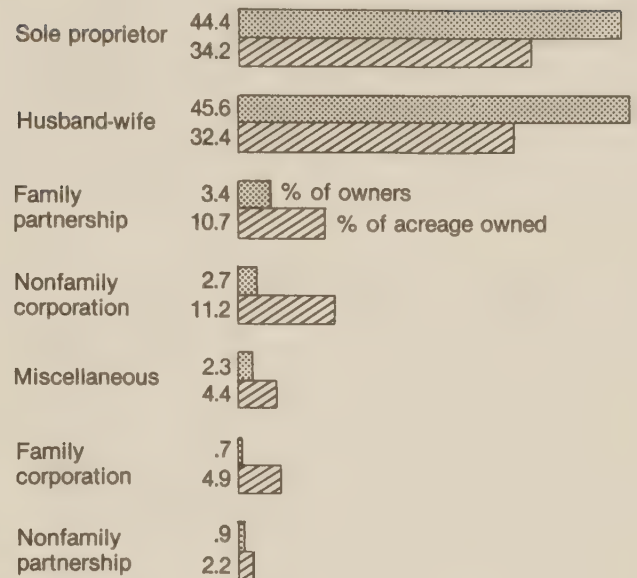


Other includes such occupations as military, homemaker, and unemployed. 1978 data.

Twenty-nine percent of farm and ranch land held in 1978 had been acquired by the current owner since 1970; 14 percent had been in the same hands since the thirties or before. About 57 percent of the land had been purchased from nonrelatives and 18 percent from relatives. The remainder had been inherited or acquired as a gift. The top 1 percent of farm and ranch land owners (in terms of acreage owned) held about 37 percent of the land, and the top 5 percent held 50 percent of the land. (AIB-435)

Foreign Investment Doubles in the U.S. Food and Agricultural System. Foreign direct investment in U.S. firms and real estate about doubled between 1973 and 1978. Most of the increase in direct investment came from Western Europe and Canada, not from oil-exporting countries. Foreign investors do not dominate firms in the production, marketing, or processing of any food items. (AER-456)

### Types of Private Landowners



1978 data.

Farmland Values Increase. Farmland values increased by 15 percent between February 1, 1979, and February 1, 1980, matching the 5-year trend. Activity in the farm real estate market declined in 1980 as a result of higher interest rates and lower farm incomes. The price of farmland was expected to increase by less than 10 percent in the year ending February 1, 1981. The national average price of farmland as of February 1, 1980, was \$641 per acre, and the value of total farm real estate was \$668 billion.

### Gulf Region Coal Development Will Not Significantly Reduce Farm Output.

About half of the land in the rural portions of the coal production areas (CPA's) of the Gulf region (southern Alabama, eastern Texas, and southern Arkansas) is in farms. About half the farms are commercial, and half are residential or part-time. Livestock and poultry are the principal products sold, followed by cotton and soybeans. Based on 1974 farm production data, the

average annual value of farm production lost to strip mining in the next 25 years would be about \$1.2 million for the region, 0.23 percent of the productive capacity of the CPA's. With ample water available in most locations, water shortages are not expected to result from increased coal development.

Coal Development Will Strain Western Rail Capacity. Western coal production in 1985 is projected to be 4.5 times as large as in 1975. One study concluded that if projected 1985 coal flows from mines to powerplants were routed on the existing system, 58 sections of track in the western transportation system would have to carry 10 million tons or more of coal per year. Twenty-two of these sections, representing over 2,000 miles of the system, could experience capacity problems in varying degrees of severity if no additions to rail capacity were made by 1985. A second study constrained each track section's coal flow volume to its estimated capacity in 1975. This study, although underestimating the severity of the problem by ignoring the transportation needs of other commodity flows, concluded, nevertheless, that 28.4 million tons of demand for coal from Gillette, Wyoming, could not be supplied without making additions to the capacity of the transportation system by 1985.

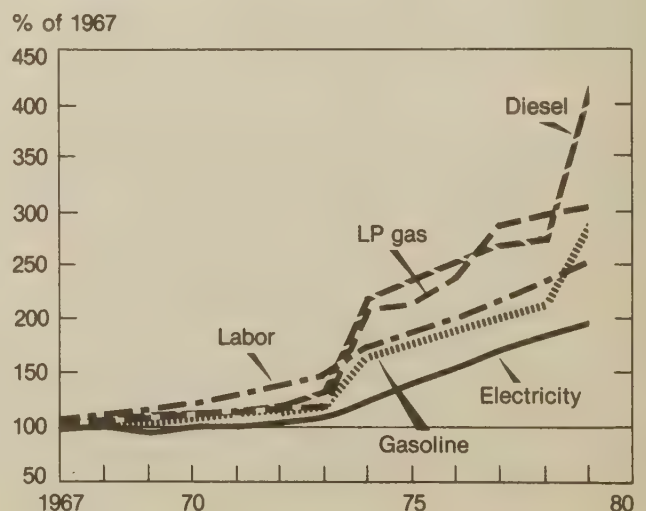
New England's Fuelwood Use Increases. The six New England States burned an estimated 2.9 million cords of firewood during the winter of 1978/79, according to a sample survey. Consumption rose 9 percent over the previous winter. Of the 4.3 million households in New England, 33 percent burned at least some wood for home heat. Firewood supplied 4 percent of New England's total home heat energy, displacing the equivalent of 226 million gallons of No. 2 heating oil. About 40 percent of

the wood burned was purchased; the rest was supplied by the consuming households. Twenty-four percent of the owner-occupied households burned wood in stoves or furnaces, which are more thermally efficient than fireplaces. The survey data, although for one winter only, suggest that fuelwood consumption will rise as more thermally efficient devices for burning wood (airtight stoves and furnaces) are marketed. (BLA-7)

Efficiency Loss Small Due to 160-Acre Irrigation Limit. The loss in production efficiency would be small if the 160-acre limit for farms receiving Federal irrigation water were enforced. On most projects, the cost per unit declines only slightly at sizes above these levels, with maximum economic efficiency almost always achievable with less than 640 irrigated acres. Generally, farms over 640 acres will provide an above average income from farming to the farm family.

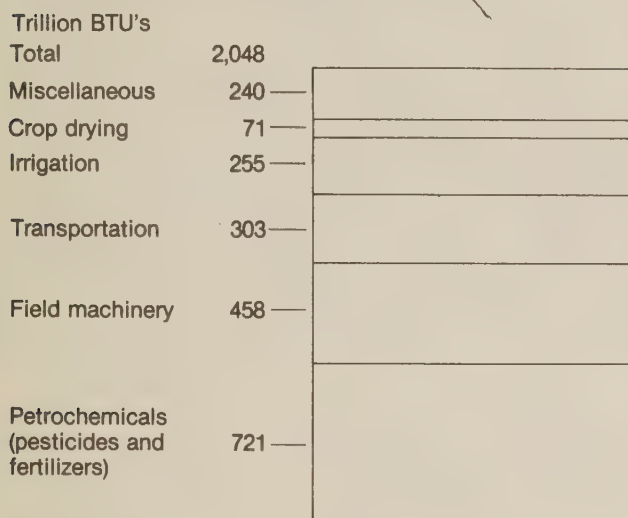
Energy Costs Will Alter Irrigation Systems. Farm profits can be increased significantly and the farm's water bill reduced significantly by holding irrigation to levels below those

#### Energy Prices Paid by Farmers





### Energy Used in Agricultural Production



1978 data.

intended to maximize yield in areas where water prices are medium to very expensive. There is little incentive for farmers to conserve water in areas of low water prices. Rising energy costs and shortages of some energy sources will cause some irrigators to switch to alternative irrigation systems and power sources. The shift to water efficient and energy efficient systems will be most pronounced in areas of declining ground water supply and high pump lift. High costs for diesel fuel are pushing farmers to convert their powerplants to electricity, propane, and, where available, natural gas. Diesel-powered, high-pressure center pivot irrigation systems in the Northern Great Plains will probably be converted to low-pressure center pivots powered by electricity.

Productive Uses for Nonirrigated Corners. Nonirrigated corner areas on farms irrigated by center pivot systems can be left idle, can be watered with conventional irrigation systems, can be watered with a newly developed corner attachment to the center pivot system, or can be put in permanent ground

cover. The corner attachment system gives the highest net return according to a study of Colorado farms, but requires the largest investment. Permanent cover in corners would provide some benefits not evaluated in the study: reducing wind erosion and weed growth and enhancing wildlife habitat.

Unused Land Resources Mostly in Africa. About 75 percent of the world's unused but potentially arable land is in Africa. Most of this is marginal, however, and will require large investments to make it productive. Moreover, it is likely to degrade rapidly unless cultivated with great care. Almost all primary agricultural land is already under cultivation, except for a relatively small area in central Africa.

Severe land degradation and falling yields can be expected to continue in the Sahel region of Africa, Lesotho, Nepal, the Andes mountains, coastal regions of Peru, northeastern Brazil, semi-arid areas of Mexico, and part of Indonesia. The rangelands in west Asia are also being degraded, due to overgrazing and salinization. Significant yield increases are possible in central and southern Africa, Argentina, Brazil, the USSR, and Europe. Modest yield increases can be expected in the other agricultural areas of the world.

Agricultural Resources Inventoried in Four Countries. In work funded largely by the Agency for International Development, a land use and cover map for the Dominican Republic was visually interpreted from satellite imagery. Major agricultural uses of land were listed for geographic resource planning units. Agronomic and economic variables were collected by region for incorporation into the agro-economic information system. Similar land

inventories were conducted for Syria, Costa Rica, and Honduras.

Soil Erosion Reduces Crop Production, Raises Costs. Soil erosion, if continued at current levels over the next 50 years, would reduce productive capacity equivalent to the loss of 23 million acres of cropland. At 1977 erosion rates, the total resources required to produce the projected output in the year 2030 would be about 9 percent higher than if erosion rates are reduced to the long-term economic level--that is, the level at which prices are about 1 percent higher as a result of excessive erosion.

A study in southern Iowa compared six combinations of erosion control methods on cropland, including crop rotations, terracing, contour planting, and conservation tillage. Each combination was designed to bring erosion losses down to 3 to 5 tons per acre per year. Losses of this magnitude could be sustained without depletion of the soils studied. Farmers in the study area are losing an estimated \$6.7 million per year because soil depletion increases annual fertilizer and tillage costs, and cuts yields.

Soil Conservation Can Increase Production. Net farm income would be expected to increase within 15 years in west Tennessee if soil erosion, which is quite high in the region, were reduced to 5 tons or less per acre per year. Minimum tillage effectively controls erosion, but is not widely accepted by local farmers and is not well suited to cotton production. Grass-based rotations also control erosion, but would reduce farm income substantially. Terracing is effective, but lack of Federal funds limits its adoption under present cost-sharing policies. Farmers who invest in soil conservation practices tend to be white males, less than 55 years old, with

high incomes, some college education, and large land holdings.

Soil Conservation Policy Options Have Very Different Effects. Soil conservation practices and erosion would both be unaffected by a policy of 75 percent Federal subsidization for conservation practices, such as grassed waterways and contouring. Mandatory restrictions on soil loss to maintain soil productivity levels would reduce farm income by 4 to 17 percent when no subsidies were provided and up to 13 percent when the cost of conservation practices was shared by the Federal Government.

A mandatory policy would reduce income on grain farms more than on livestock farms, and would reduce the income on small farms by a larger percentage than on commercial farms. When minimum conservation plans were imposed, soil losses would be reduced by 39 to 77 percent, while income would be reduced by 3 to 7 percent. The effects of the conservation policies on farm income and soil loss were estimated from computer models of farms in southeast Minnesota.

No-Till Increases Yields and Lowers Costs. Corn yields on some soils are 5-10 percent higher and costs are 5-10 percent lower with no tillage methods than with conventional tillage in the Southeast. Soybean yields are similar under both methods, but no-till production costs are slightly less. In Georgia, where production is shifting from cotton and timber products to soybeans, use of herbicides and insecticides is up, but there is little use of conservation-type tillage.

Livestock Waste Management Could Be Less Subsidized. A Wisconsin study of cost sharing for manure-handling systems concludes that the Government share could be lowered by a fourth or



more and still provide incentive for farmers to adopt water quality improvement measures. A Pennsylvania study finds that both rural communities and poultry-processing plants benefit from joint treatment of waste water, since the economies of size exceed the cost increases associated with treating more concentrated wastes. A manual was prepared to aid farmers and water quality planners in selecting livestock waste management practices.

Pesticide Production Industry Highly Concentrated. Two pesticide production firms account for 74 percent of the corn herbicide market and for 87 percent of the sorghum herbicide market. A substantial and increasing share of pesticides is formulated by vertically integrated producers. A reduction in new pesticide chemical development, restrictions on existing pesticide uses, and greater concentration in the pesticide industry will tend to increase farm chemical pest control costs in the future. (AER-461)

Pesticide Supply and Demand Evaluated. Farm pesticide supplies were adequate but prices up 10 percent in 1980. Herbicide production was up 5 percent over 1979 and fungicide production was up 1 percent. Insecticide production was off 6 percent, offsetting substantial carryovers from the 1979 season. Basic producers reported no problems in raw material availability in producing pesticides for 1980, although prices for most materials (solvents, for example) were 25 to 50 percent higher than in 1979. Herbicide use was up 2 to 5 percent and insecticide use up 8 to 10 percent. Greater use of insecticides was attributed to more insect problems compared with unusually light infestations in cotton and several other crops the previous season. (AER-454)

Pesticide Restriction Could Hurt Tobacco, Onion, and Potato Farmers. If maleic hydrazide, a growth regulator, were barred from agricultural use, tobacco growers could suffer annual losses of between \$120 million and \$130 million, onion growers about \$4 million, and potato growers about \$1.6 million.

## Rural Development

Work underway in the rural development area involves: demographic research; farm work force and rural labor markets; rural health, education, and housing; State and local government services to rural communities; and rural credit. Some of the significant results in fiscal 1980 follow.

Hired Farm Work Force No Longer Declining. The number of hired farmworkers stabilized in the seventies after a long decline earlier. Similar trends were observed for migrant farmworkers. There were about 2.7 million hired farmworkers in 1977, about 200,000 of whom were migrants. Over half were under 25 years of age and over three-quarters were male. Thirty-six percent of the workers were students. Seventy-two percent were white, 11 percent were Hispanic, and 17 percent were black or other minorities. The median education of all hired farmworkers 25 years and over was 10.1 years. Average annual earnings were \$3,265 per worker, \$1,913 of which was earned for an average 93 days of hired farmwork; the remainder came from nonfarm employment. (AER-437)

Similar Unemployment Among Metro, Nonmetro Youth. Youth unemployment in nonmetro areas was 11.7 percent in 1979, the same rate as for metro youths. The 880,000 unemployed nonmetro youths constituted nearly half

of all unemployed nonmetro workers. Unemployment is significantly greater for blacks and other minority youths: the unemployment rate for nonmetro minority youths was 23.3 percent, less than 1 percentage point below the rate for metro minority youths. Over 75 percent of both metro and nonmetro employed youths held positions in either manufacturing, wholesaling and retailing, or a service industry.

Nonmetro Unemployment Statistics Misleading. Unemployment statistics are used in allocating billions of dollars in Federal funds to State and local governments. Yet the concepts and indexes used to measure unemployment probably provide an inaccurate assessment of labor market conditions in nonmetro areas, especially in comparison to metro areas. The reported levels of unemployment in nonmetro areas underestimate the true levels because of factors such as the exclusion of discouraged and self-employed workers from unemployment statistics, low levels of data reliability, and metro-nonmetro differences in economic structure. If, for example, unemployment among the self-employed

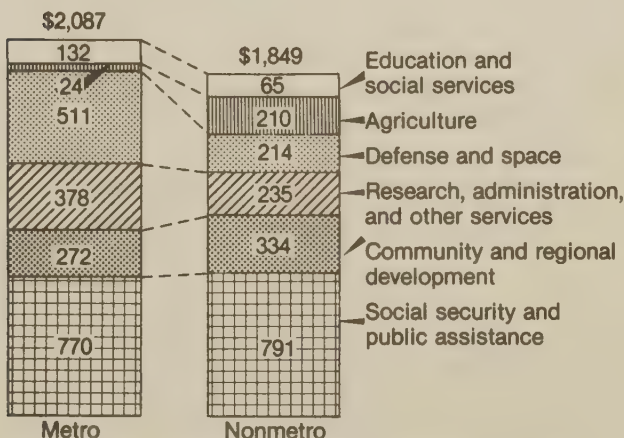
were factored into unemployment statistics, the nonmetro unemployment rate would rise by about 1.5 percentage points, while the metro rate would rise by only 0.9 percentage point. (RDRR-18)

Federal Spending Favors Metro Areas. Metro areas received 9 percent more Federal outlays and loan guarantees per capita in fiscal year 1978 than nonmetro areas. Nonmetro areas received more for agriculture, natural resources, community facilities, and business and industrial development; metro areas received more for defense, housing, transportation, employment training, social services, and Federal Government administration. Transfer payments to and revenue sharing with local governments were about equally divided between metro and nonmetro areas. Twenty percent of Federal outlays to nonmetro areas were loans and loan guarantees, while metro areas will have to repay only 10 percent of the Federal outlays they received. (RDRR-25)

Programs that contribute directly to personal income are likely to stimulate the local economy more than spending

### Where Federal Program Money Is Spent

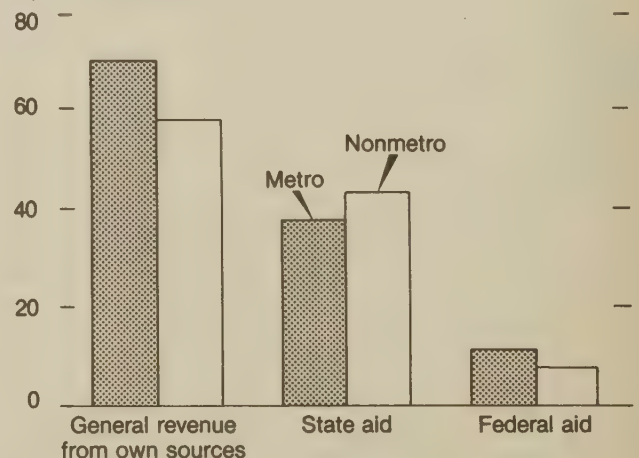
Per capita outlays



Includes FY 1978 expenditures, loans and loan guarantees for 87 percent of Federal funds for which metro-nonmetro distribution is known or estimated.

### Local Government Revenues

\$ per \$1,000 resident income



State aid includes Federal aid distributed by States.  
Source: 1977 Census of Governments.



for other purposes. The North Central States received the lowest overall level of per capita outlays in 1978, but had much higher percentages of programs contributing directly to personal income. The Western States had the most per capita outlays, but the smallest share of income programs. Outlays in the North Central States were much more likely to come from loans and loan guarantees than from grants and direct spending.

Nonmetro Local Governments Depend on State and Federal Aid. Revenues of local governments located within metro areas increased by 235 percent from 1967 to 1977, while revenues of local governments in nonmetro areas increased by 130 percent. Local governments overall became more dependent on State and Federal funds. State and Federal aid to metro local governments grew faster, but nonmetro local governments still relied for more of their total revenues on State and Federal funds. As a result, both property taxes and other taxes tend to be more important to metro local governments than to those in nonmetro areas. Metro local governments also have consistently relied more on user charges and utility revenues.

Homeownership is Possible Source of Income for Older Persons. Over two-thirds of all U.S. households headed by a person 65 or older owned their homes in 1976, with 84 percent of the homes owned free of any mortgage. Thus, many older persons have the potential to convert the equity in their homes into regular income. Selling the home is not the only way. Buying a less expensive home, renting, placing a mortgage (either lump-sum or in regular increments), or purchasing an annuity may often be financially preferable.

Mobile Home Ownership Up. The number of families living in mobile homes doubled during the seventies, topping 4 million by the decade's end. Nonmetro families are three times more likely to live in mobile homes than metro families. Mobile home living is more common in the South and Southwest, and among young and middle income households. Mobile homes, although steadily increasing in price (and size), are still less expensive than conventional housing. Newer mobile homes--particularly the larger units--are becoming increasingly similar to site-built homes.

Rural Banks Buy More Municipal Bonds. Rural banks increased their support of the municipal bond market during the seventies, while urban banks reduced their support. Commercial banks are the largest purchasers of municipal bonds, so the growing support of the bond market by rural banks made debt financing of public facilities construction easier for both rural and urban governments.

Nonmetro governments increased the amount of their outstanding debt by 43 percent between 1972 and 1977. Most of those funds were used to finance construction of community facilities for a growing rural population, but a significant amount was also borrowed to help rural industry with industrial development and pollution control. Rural governments seem to receive lower credit ratings on their general obligation bonds and receive fewer bids when their bonds are sold competitively; both of those factors add to the cost of debt financing.

Multicounty Planning and Development Receives More Federal Aid. Growing Federal aid to multicounty substate regional planning and development organizations during the last 2 decades increased both the number and

importance of those organizations. Thirty-nine Federal programs supported or induced substate regional activities during 1977-79: four programs were administered directly by USDA, and many others also had direct relevance to rural development.

Many regional councils (substate organizations exercising multiple functions) have authority to review Federal grant applications. Metro councils serve larger populations and have larger budgets, but nonmetro councils spend more on a per capita basis. Metro councils are more likely to handle transportation and pollution issues, while nonmetro councils are more likely to have economic development planning functions.

Manufacturing Employment Declines in Metro Areas. U.S. manufacturing employment continued to decline during 1973-77. Most job losses were concentrated in the inner cities of the older and larger metro areas in the Northeast and the North Central regions. These regions also suffered employment declines in construction, transportation, communication, and public utilities. Manufacturing employment in nonmetro areas continued to grow, although at a much slower rate than in the preceding 4 years. Declines in nonmetro employment growth were least severe in the more rural counties.

Expansion of existing rural plants played a major role in stabilizing manufacturing employment in nonmetro areas between 1969 and 1975 according to data from Dun & Bradstreet. Manufacturing employment declined by only 0.1 percent in nonmetro areas, compared with 4.1 percent in metro areas, because existing plants continued to expand employment faster in nonmetro areas than in metro areas. Plant closings and startups had about

the same impact on manufacturing employment in both nonmetro and metro areas. Plant relocations had little impact: only 620 of 268,220 metro plants moved to nonmetro areas during 1969-75.

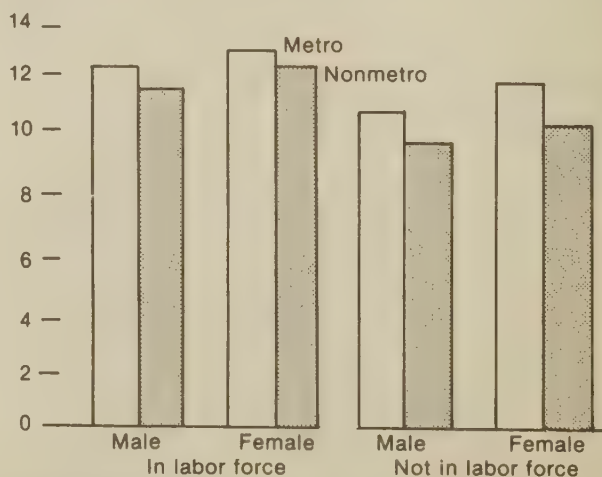
Rural Population Grows. Rural areas and small towns continued to grow through 1978. From 1970 to 1978, the nonmetro population increased by 10.5 percent while the metro population grew by 6.1 percent. Part of the nonmetro growth was due to the nearly 3 million people who moved into nonmetro communities. Nonmetro population growth during 1974-78 was greater than that during 1970-74. Population data are not yet available to show whether the nonmetro growth trend was affected by the gasoline shortages of early 1979 and subsequent price increases.

#### Education and Earnings of Nonmetro Blacks Well Below Average.

Proportionally fewer nonmetro blacks graduated from high school or college, were functionally literate, or participated in adult education during the seventies than any other racial or

#### **Labor Force Status of Metro and Nonmetro Blacks, by Educational Level, 1977**

Median school years completed



"Blacks" include all civilians 16 years old and over who are non-white; this category is composed primarily of black persons.

(RDRR-21)



residential group. In 1977, 32 percent of all nonmetro black males had completed high school, compared with 48 percent for central city black males and 60 percent for nonmetro white males; the differences for females were similar. The 1977 functional illiteracy rate of nonmetro blacks was nearly three times that of metro blacks and almost five times that of nonmetro whites. Nonmetro blacks were also less likely to be in the labor force, hold white-collar jobs, or have incomes above poverty level, due at least partly to less education. (RDRR-21)

Health Care Programs for the Elderly Miss Target. Health care programs such as health screening, meal services, transportation, or in-home health-aide services, intended as a substitute for institutionalization, tend to reach only the socially active elderly--who are not very likely to require institutionalization. Participation in such programs, furthermore, in a model project in Arkansas, did not reduce institutionalization or improve the physical or mental health of participants. To be a more effective substitute for institutionalization, these programs should reach the socially inactive elderly, especially those isolated in rural areas. The home health-aide and the meal service programs seem to be more effective than others in reaching the elderly, and the home health-aide program seems most effective in keeping the elderly out of institutions.

### **Increasing Data Accuracy and Dependability**

The ESS statistics program collects, analyzes, and publishes agricultural production and marketing data, including: number of farms and acreage in farms; crop acreage, yields,

production, stocks, value, and utilization; inventories and production of livestock, poultry, eggs, and dairy products; prices received by farmers for products they produced, prices paid for commodities and services used in production, and related indexes; farm employment and wage rates; food supplies in cold storage; and other relevant aspects of the agricultural economy. Estimates for about 150 crops and 50 livestock items are published in about 500 Federal and 10,000 State-Federal reports each year. All information is made available to the news media and public at scheduled release times.

The program results reported here focus on changes that are made to improve data usefulness and reliability. Thus, considerable emphasis is placed on improving sample survey designs as well as testing new forecasting and estimating techniques, such as the use of satellite data. Also included here are the review, coordination, and monitoring of the surveys conducted by the U.S. Department of Agriculture, and the review of all proposed statistical forms and survey plans.

Thousands of farmers, processors, merchants, and others voluntarily respond regularly to surveys about crop, livestock, and other agricultural activities. These reports are supplemented by field observations, objective yield counts and measurements, and other data to provide reliable information for use by the public.

The following are some of the major activities and data improvements made.

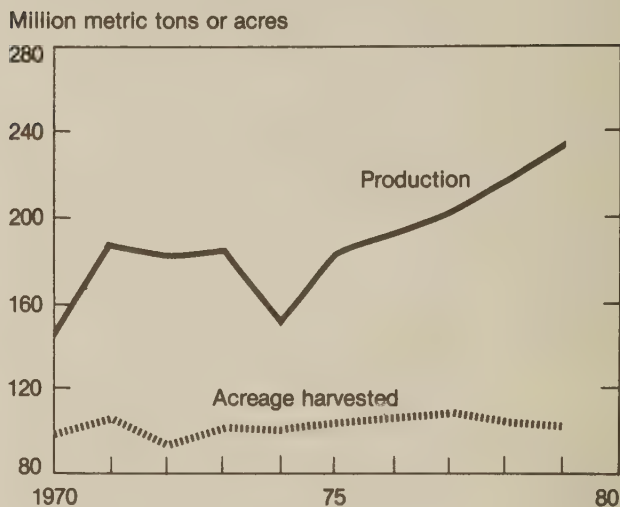
Price Statistics Improved. A program to improve the reliability of estimates of prices received and paid by farmers, initiated in fiscal 1977, is being

continued. Most of the surveys of prices received by farmers for crops are on a probability sampling basis or are enumerations. Probability samples to obtain livestock prices have been implemented in 25 States, and pilot work is planned for egg prices in five States. Most surveys of prices paid by farmers for production items and services have been converted to a probability basis.

Vegetable Estimates Assessed. Review of the vegetable estimating program, and many contacts with industry representatives, indicate that the needs are quite variable from area to area. Under current proposals, planted acreage estimates by area of production will be provided as soon as possible after planting. Estimates of acreage harvested, production, price, and value, which are needed for planning purposes but are not critical on a current basis, will be published less often. The program will be flexible by area and by crop to meet industry needs better. Proposals will be circulated widely to industry and data users to obtain their input before the new program is implemented.

Satellite Data Used To Improve Estimates. Plans for using satellite data to improve current estimates of wheat in Kansas and corn and soybeans in Iowa were implemented under the AgRISTARS Domestic Crops and Land Cover Project. The Iowa and Kansas State Statistical Offices received equipment and training for their expanded role in this research. A second feature of work in Kansas was examination of land cover estimates which include such items as rangeland, woodland, cropland, and urban areas. Additional ground data were collected to study the relationships between land cover and LANDSAT spectral readings. Other related research activities

### Feed Grain Acreage and Production



1980 based on August intentions.

concentrated on studying improvements in registering satellite data to actual ground locations for multiple dates, improving the classification of types of crop or land cover, and improving data-handling capabilities.

New Lists of Farm Operators Developed. New list sampling frames of farm operators were constructed in 29 States and are being used for current surveys. Computer programs are used to delete duplications when names of farm operators are obtained from more than one source, to update names and addresses to keep the lists current, and to streamline sample selection procedures. Use of the new frames will improve the overall accuracy of the total statistical program in the long term, increase efficiency in day-to-day management of list activities, and reduce respondent burden.

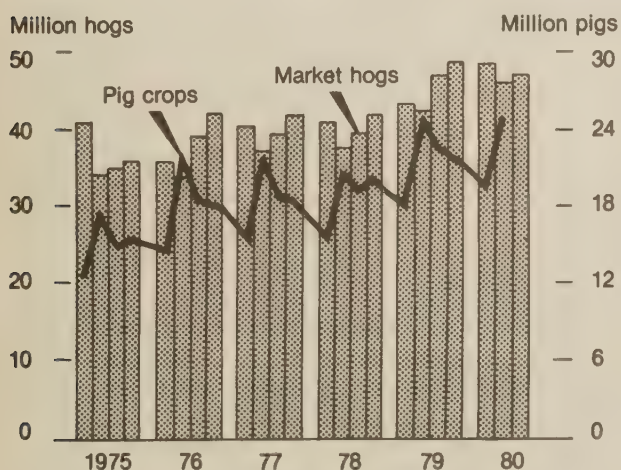
December and June Enumerative Surveys Conducted. The 1979 December Enumerative Survey obtained information on livestock, poultry, and fall seedings of wheat and rye. The sample consisted of over 25,000 area tracts selected from the previous June



Enumerative Survey, supplemented by a list sample of over 23,000 large livestock and poultry operators. The 1980 June Enumerative Survey obtained information on planted and harvested acres of crops, land use, livestock, farm labor, farm grain stocks, and farm numbers. The area sample consisted of over 15,000 land segments and was supplemented with list samples of more than 12,000 large cattle operators and over 7,000 large hog operators. These are the largest probability surveys conducted during the year, employing about 1,000 part-time enumerators. They also supply information requested by other agencies, such as data on type of farm, farm population, hired agricultural labor, and grazing fees.

New Sampling Areas Developed. A new area sampling frame stratified by land use was developed for Pennsylvania, using conventional low-altitude aerial photography. A new sample, using replicated sampling, was selected for the June Enumerative Survey from this frame. Area frames were also developed for North Carolina, Georgia, and a three-State area in Brazil using satellite imagery and multitemporal analysis for crop specific sampling.

#### Market Hogs and Pig Crops

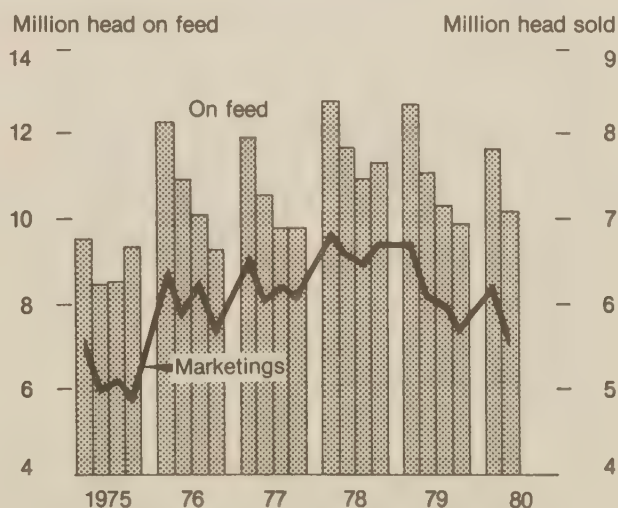


Pig crops—December-February, March-May, June-August, and September-November. Market hogs on farms—December 1 previous year, March 1, June 1, September 1, and December 1. Quarterly data for 14 States.

This was part of the AgRISTARS project where sample data will be collected by satellite using remote sensing techniques. All the new frames have been digitized and are in computer media. New replicated samples were selected for economic surveys in Washington, Oregon, and New York. A replicated sample was selected in 29 counties in Mississippi and Tennessee for a household survey of minority farm operators.

Multiple-Frame Livestock and Poultry Surveys Conducted. Multiple-frame surveys were conducted in all States: December 1 and June 1 for hogs, and January 1 and July 1 for cattle. In addition, 14 States were involved in hog and pig inventory estimates for March 1 and September 1. Multiple-frame surveys utilize two sampling frames: a list of farms stratified by size of operation, and the land-area frame used in the June and December Enumerative Surveys. The lists are updated annually from Federal, State, and industry sources prior to the selection of new samples. In list update activities, a special effort was made to improve lists of dairy operations. Separate

#### Cattle on Feed and Marketings



Quarterly data for 23 States.

stratification of dairy operations continued to be used with the January 1 and July 1 cattle inventory surveys. Rotational sampling for multiple-frame hog surveys was initiated in five western Corn Belt States on a pilot basis, to reduce respondent burden, beginning with the December 1979 survey. The multiple-frame approach to estimating inventories of chickens and layers was continued in Alabama, Arkansas, and Virginia.

#### Objective Yield Surveys Conducted.

Objective yield surveys for wheat, corn, cotton, and soybeans were continued. There were 17 States in the wheat program, with 2,450 sample plots, and 16 States for corn, with 2,870 sample plots. About 700 enumerators with special training interviewed farm operators and made field counts and observations monthly in sample plots throughout the growing season, and harvested a sample of the mature crop. The surveys concluded with post-harvest observations to determine harvesting losses.

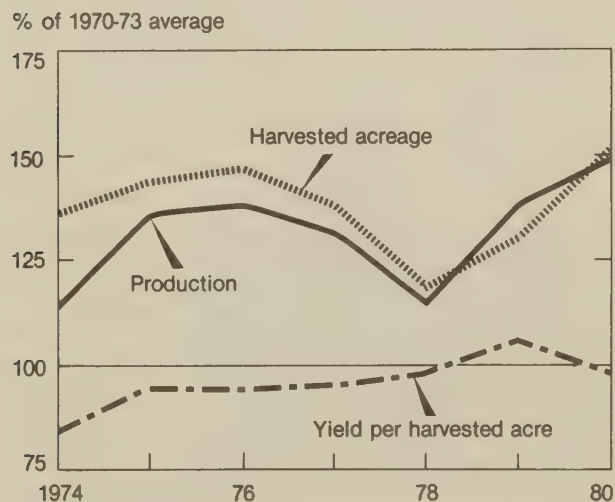
Objective yield surveys were continued in 11 major fall-crop potato States,

which produce over 90 percent of the national crop. A total of 2,100 samples were assigned to these States to provide the primary yield indicator; probability surveys also were conducted in these States to obtain primary indications of planted acreage. Enumerators also asked farmers the kinds and application rates of fertilizers applied to wheat, corn, cotton, soybean, and grain sorghum.

Supplemental funds for a tart cherry objective yield survey in Michigan were again provided by the Michigan Department of Agriculture. Data were collected for the mid-June production forecast using a sample of 300 orchards; forecasts were updated and harvest losses determined.

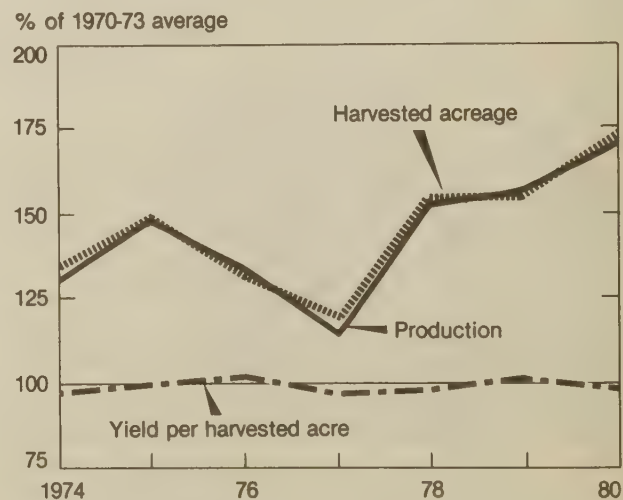
Objective yield surveys were continued for burley tobacco in Kentucky to supplement indications obtained from mail surveys. Plant counts were made in 120 fields. The average weight of cured leaves per plant was obtained at the time of stripping. Leaf count and measurement work also were conducted in a subset of 40 fields with data used to forecast the crop.

#### **U.S. Wheat Acreage, Yield, and Production**



1980 July indications.

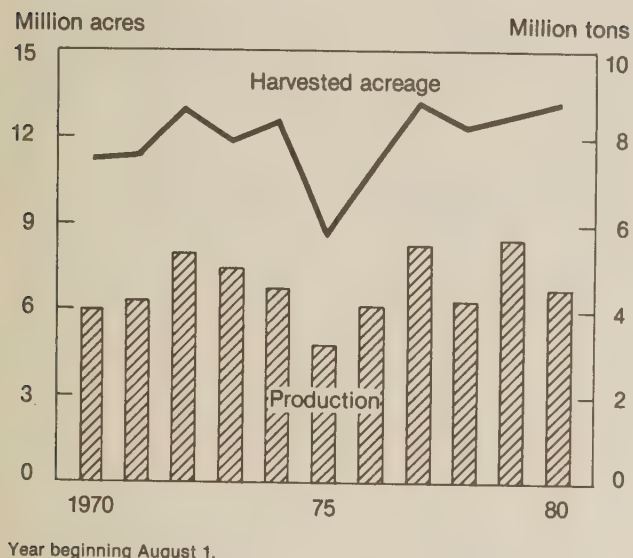
#### **U.S. Rice Acreage, Yield, and Production**



1980 August indications.



### Cottonseed Acreage and Production



Weekly Weather and Crop Information Provided. The national Weekly Weather and Crop Bulletin, published in cooperation with the U.S. Department of Commerce, holds wide public interest because it relates to current conditions and progress of crops and helps bridge the gap between monthly crop data. Summaries of crop progress are supplied by the State Statistical Offices. Precipitation, temperatures, and other related weather information come from the National Oceanic and Atmospheric Administration. This weekly publication was upgraded during the year by releasing, each Monday, a short summary of planting and harvesting progress by State for the major crops. The usual report, including the data released on Mondays, continued to be released on Tuesdays.

Producer-Owned Grain Stored Off-Farm Surveyed. Information on the quantity of producer-owned wheat and soybeans stored off-farm was collected in conjunction with the January 1, 1980, grain stocks survey. The information was used to determine the magnitude of wheat and soybean movement off-farm but still under the control of the

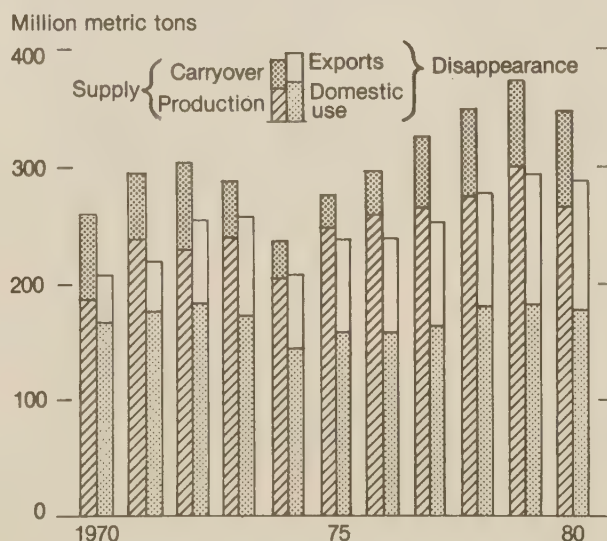
producer. Feed grains were deleted from the survey in 1980.

Floriculture Firms Surveyed. The annual floriculture survey was made in cooperation with the Bureau of the Census, which conducts a Horticultural Specialties Census every 10 years. This cooperative effort avoided surveying firms twice for the same information, thus reducing the cost and respondent burden.

Blueberry Crop Estimated. Early season forecasts and end-of-season estimates for blueberries were made for Maine, Michigan, New Jersey, North Carolina, Oregon, and Washington. The early season forecast for New Jersey was moved from June to July; June proved to be too early for growers to provide meaningful information.

Livestock Data Additions and Deletions. A data series on hogs and pigs, cattle and calves, and milk cows concerning percentage of operations and inventories by size group was modified, beginning January 1, 1980, to provide

### Total Grain Supply and Disappearance



Supply includes imports. Year beginning October 1 for corn and sorghum; June 1 for oats, barley, wheat, and rye; and August 1 for rice. 1979 preliminary. 1980 projected.

additional size group classifications for cattle and milk cows. Balance sheets were developed at year's end for hogs and pigs, cattle and calves, and sheep and lambs. Similar data were provided at midyear for cattle. These series provide preliminary supply and disposition information. A new statistical series for numbers of layers, rate of lay, and egg production, with separate estimates for table and hatching eggs, was started in December 1979. Surveys are conducted and data are published monthly by State. A monthly report of processed catfish (raised on farms) was initiated in January 1980. All known processing plants are surveyed each month.

Aquaculture Benchmark Survey Conducted. Production of trout and catfish in 12 major producing States was estimated to serve as a benchmark for future surveys at the request of USDA's Aquaculture Committee. Production area, value of production, inventory, and sales outlets were also estimated from the survey.

Seed Crop Estimates Evaluated. The statistical needs of the seed industry were evaluated. Types and varieties of vegetable seeds included in the seed crop program were updated for the 1980 crop. Merion bluegrass is declining in popularity and was combined with proprietary varieties; statistics for common and proprietary bluegrass are now published separately and titled Kentucky bluegrass seed. Perennial rye grass was divided into proprietary and other classes. Idaho, Montana, and Washington are combined for proprietary varieties, but estimates for Oregon (the major producing State) are published separately.

Potato Estimates Reviewed. The potato-estimating program was reviewed with National Potato Council (NPC) representatives. At the request of the

NPC, May 1 estimates of stocks were made again. Potato planting intentions were discontinued for all seasonal groups.

Data Users Consulted. Four major conferences were held with diverse groups of data users around the country to solicit advice on making the data more useful and identifying data series no longer needed. Many of the changes and accomplishments in fiscal 1980 are the result of these meetings and other contacts with users of agricultural statistics.

Rapid Data Transmission Provided. Crop and livestock estimates are now disseminated via computer to all States except Alaska within minutes after release time. User demand has led to continued expansion in this area.

Survey Methods Evaluated. No significant differences in estimates were found on the multiple frame hog survey when acreage questions were omitted from the questionnaire; furthermore, a proposed modification in the operation description did not significantly affect the hog data collected. The best procedure, out of six studied, to impute for missing items on the multiple-frame hog survey was a ratio procedure that used replication to estimate standard errors.

The new methodology of network sampling--a sampling technique that may have important applications to the ongoing surveys of ESS--is being used on the Small Farm Survey. The reason for network sampling on this survey is to collect data from black farmers.

Early Warning/Crop Condition Assessment Research Conducted. One of the objectives of the AgRISTARS program is



early warning of changes affecting production and quality of commodities. The AgRISTARS research program involved identifying environmental and agronomic factors that influence crop conditions and determining the impact on the area affected. Fiscal 1980 accomplishments include testing of a wheat stress indicator model, utilizing cloud cover to estimate solar radiation, and testing, in an operating environment, a winterkill indicator model, and a wheat stress model. A broad range of research was also undertaken involving a combination of spectral and environmental remote sensing data with traditional ground observation information.

#### Other Satellite Data Research

Continues. Satellite data can be used to help estimate Iowa crop acreages for Crop Reporting Districts and will be useful once LANDSAT data are made available within a dependable time (14 days). In other research using LANDSAT data: spring imagery was found to reduce significantly the incidence of trees being identified as spring-planted crops in August and September LANDSAT imagery; LANDSAT data were used to develop both domestic and foreign area-sampling frames as part of a program to study rangeland conditions in an arid environment. Satellite spectral data, combined with a double sampling procedure, were found to have the potential to improve yield estimates for corn and soybeans.

Yield Forecasts Made. A feasibility study was completed concerning procedures to establish an objective rice yield estimating program. An extensive data set was collected for corn and soybean growth and development over the major corn production area in north central and northeast Missouri.

These data are sufficiently complete to allow for extensive model development and testing concerned with crop yield forecasting and plant process modeling. Data were collected in North and South Dakota to update spring wheat forecast models for number of heads. This research addresses the expanding shift to dwarf varieties.

Yield Forecast Model Developed and Tested. A physiological corn model was developed in cooperation with scientists of the Texas Agricultural Experiment Station and USDA's Science and Education Administration. Criteria were established for acquiring and testing models for potential domestic and foreign application. One such model was evaluated and is now being tested. Initial testing of several simulation wheat-forecasting models is underway to determine the sensitivity of the models to the input variables.

Remote Sensing Ground Truth. Data were collected to provide detailed inventories of specific land area sites. This information was obtained for the National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, and Science and Education Administration to evaluate remote sensing capability. Data were collected at 9-day and 18-day intervals by personal observation of growth stages during the growing season. Twenty-nine States were involved in this survey.

Minimum Wage Study. Data were obtained at the request of the Minimum Wage Study Commission to determine the effect of changing the current minimum wage regulations and exemptions. The July 1980 Farm Labor Questionnaire was expanded to cover information related to exemptions from the 500 man-day regulations, and to acquire more detail on the individual operator characteristics.

## Meeting Future Information Needs

Agriculture and rural areas are now more complex and more interrelated than ever before. U.S. and world agriculture are also changing. As a result, there is need to continue to update, strengthen, and adapt ESS programs to provide adequate descriptions of rural areas, natural resources, and the total food sector, its capacity, efficiency, and performance. Economic and statistical information are vital ingredients to informed decisionmaking, whether by governments, farmers, businesses, or individual citizens.

The integration of input and product markets has blurred the lines between input supply, farm production, and marketing. Farm people, who could once lay sole claim to the resources needed for production, must now compete with others who are demanding their share of rural land and other productive factors. Rural labor no longer regards agriculture as its only or even major employer. And competition for capital has increased.

Continual improvements are needed in the economic and statistical information systems to keep pace with such changes. Even more important than specific improvements, however, is the need to maintain a capability to be responsive to future changes. The development of an economic information and statistical data base for U.S. agriculture is an evolutionary process. It needs continuous modification to keep abreast of changing economic and social conditions and public needs. Because of major changes in the farm and rural economies and new demands of decisionmakers, long-term improvements in economic information and statistical data are needed, particularly in the quality and depth of such information.

## Directions for Food and Agriculture

Agriculture has become highly specialized and capital intensive, raising questions about farm finances, marketing practices, organization, and seasonal cash flow. The well-being of farmers and the viability of individual farms have become increasingly sensitive to production costs. There is growing awareness that specialization in agriculture, and variations in farm size, marketing practices, debt-equity ratios, and forms of business organization can lead to greatly different impacts of public programs on individual farmers.

Growing concentration in the food manufacturing and retailing system requires strengthening the ability to evaluate market performance. Better answers are needed to questions about the role and cost of labor in food marketing.

The impact of government regulations must be identified and assessed as they relate to all aspects of food production, distribution, and marketings.

For effective public policies and programs, better measures are needed of the level and distribution of farm income, farm wealth, financial health and viability of the sector and of major groups of farmers. The economic indicator accounts will permit the economic well-being of farmers to be compared with that of people in the nonfarm economy.

Because the farming sector is mixed with nonfarm pursuits, more information is needed on the total income of farm families from all sources. Data that consider only income from farming tell little about farm family well-being and



## Meeting Future Information Needs

thus provide limited assistance in policy decisions or in designing effective programs.

Changes in the farm sector have been accompanied by changes in marketing. The line between the production sector and the processing-distribution sector has faded. As these sectors have become more integrated, some markets have become less competitive. In some cases, nonintegrated producers have lost market access. The increasing use of "formula pricing" has lessened the frequency of directly negotiated prices, tending to erode the basis on which formula prices are settled. Thus, questions arise on the pricemaking process, the fairness of prices, and the relevance of price statistics. Questions concerning pricing equity and undue price enhancement have also been raised. In addition, futures markets have grown in importance relative to cash markets, and their role and influence on cash markets have increased.

Current financial information is developed largely from aggregate data. This approach has the advantages of limiting resource needs and minimizing the survey burden on farm and rural people. However, such aggregations have little potential in describing different strata of the farming sector. More detailed information associated with farm business establishments will help fill this particular need.

Better measures are required on well-being among farmers by geographic region, type of commodity produced, size of farm, tenure arrangement, type of business organization, and wealth. These comparisons are necessary for identifying causes of structural change, judging the viability of family farms, and assessing effectiveness of

alternative policies in achieving economic, financial, and distributional goals.

Research questions targeted for emphasis in 1981 include:

- How well do farm prices reflect product value?
- Have an increasing incidence of vertical integration back into farming and contract production of commodities begun to undermine the traditional pricing mechanisms?
- What are the long-term impacts of an increasing volume of away-from-home food consumption? (Instability in beef prices in recent years, for example, may be traceable in part to the nature of demand in the away-from-home sector.)
- How do marketing practices and enhanced product information (food labeling) affect farmers' and consumers' prices and nutritional well-being?

Food demand research will focus on improving the food price, expenditure, and consumption monitoring system. An improved knowledge base will allow more timely and complete monitoring and assessment of food marketing system performance.

The new accounts will involve summarizing and reporting sales, margins, and quantities sold for about 20 major food product categories at least quarterly. Farm value will continue to be reported as a major food cost category. In addition, for each of the 20 food groups, the proportion of the retail expenditure that pays for the direct labor, packaging, profit, advertising, and transportation inputs will be reported. Timely data

detailing food prices, consumption, and expenditures for various subgroups of the population will also be provided.

Some of the more important areas to be emphasized in the early eighties are summarized below.

Farm Sector Economic Indicators. To expand the economic indicators and improve the understanding of the cost structure, ESS plans to:

- Develop new and better indicators for describing the well-being of farmers by region and by type and size of farm under different organizational arrangements. A key monitoring device will be illustrative farms showing the cost structure and financial situation of operating farm firms. The capability will be developed to monitor costs and answer specific questions concerning the impacts of projected economic environments, farm structures, and policies on well-being for various farm situations. Emphasis will be on development of systems for continuing estimates of farm firm performance indicators to complement the aggregate farm sector accounts.

- Add to and improve data and information in support of enhanced analytical capability. Special surveys designed to represent size, commodity, and location variations among U.S. farms will provide improved information on assets, liabilities, cash flow, storage and marketing practices, and descriptions of farm business organizations. Major commodity type, region, and size of business will be of concern. Study of current production practices and

factors behind cost variability and size-cost relationships require examination of production and tax records, engineering measurements, and determination of labor use.

- Develop farm profiles by economic, social, and demographic characteristics. These profiles will be used to determine the conditions under which rural industrialization, technical assistance in the production and marketing of agricultural commodities and in the provision of production inputs, public sector employment, and various forms of direct assistance would be the most effective in improving the well-being of farmers and the comparative efficiency of large and small scale production.

Markets and Regulation. Agricultural commodity markets are undergoing major structural and procedural changes, affecting producers, consumers, cooperatives, and firms in the marketing, processing, and distribution network. Regulations are blamed for impeding the development and adoption of cost-reducing technology. Dissatisfaction has brought calls for regulatory reform or total deregulation to remove government from commodity and food markets. Yet there remain residual and legitimate concerns regarding how efficiently and equitably the food and fiber sector performs. Reflecting those concerns, the work of ESS will address:

- Strengthening the data and analytic bases for monitoring structural change in commodity subsectors from production through processing and distribution.
- Analyzing the changing nature of market institutions, the



distribution of market power, and price performance problems that may stem from these changes.

- Assessing the implications and possible impacts of existing and proposed environmental, consumer protection, and safety regulations upon food choices, price spreads and margins, food system costs, output, productivity, technical innovation, and prices for food and agricultural commodities.

Crop Data Improvement. Because of changing economic conditions, including highly volatile domestic and world markets with sharply higher costs and increased risks, greater reliance is being placed on crop estimates. To improve the quality of the official estimates is a continuous effort which includes methodological improvements such as:

- Increasing the number of probability surveys.
- Extending the use of proven objective yield methods to rice, grain sorghum, and sunflowers, in addition to the major crops.
- Expanding the current program of crop yield validation to assure the reliability of yield estimates of all major crops.

An important part of this improvement program is the research on Aerospace Remote Sensing. ESS has a major responsibility to pull together the USDA research in this area. The work is complemented by and coordinated with supplementary activities of the Commerce and Interior Departments, the National Aeronautics and Space Administration (NASA), and the Agency for International Development (AID). It focuses on short- and long-range

plans for a joint research, development, and testing program designed to satisfy USDA's information requirements on the quality of renewable resources, commodity production forecasts, land use classification and measurement, renewable resources inventory and assessment, land productivity estimates, conservation practices assessment, and pollution detection and impact evaluation.

The seventies clearly demonstrated the need for improved information on the international supply of food and fiber. But there are no easy statistical methods to meet this need. Remote sensing has the potential to provide significant improvement in the Department's current information system for foreign situations. ESS has thus planned a research program for developing and evaluating this potential and for making it operational before 1990. The plan has been coordinated within the Department and among the Departments of Commerce and Interior, NASA, and AID.

Technical support will be provided to scientists at USDA's Science and Education Administration (SEA) who are involved in developing more complex physiological models. Statisticians and economists assigned to SEA research locations will assist in designing experiments, collecting and analyzing the data, and evaluating the models.

Ground data collection, an important part of the planned program, will be expanded for the next few years. All the areas included in the joint remote sensing research program will include collection of ground data for procedure development plus testing and verification of these procedures. Included will be ground inventories of special area samples and periodic

visits to selected crop fields to determine growth stage, crop condition, soil moisture, and actual yield or production at the time of harvest. Existing area samples will be used with some enhancement, such as additional visits during the growing season, to provide ground data for both research and operational needs. In total, data collection will represent the most significant ESS input. The quality of these data will largely determine the quality of the program results.

Domestic crop acreage estimates are the most important area of remote sensing research. Although NASA will devote significant resources to this area, current plans call for ESS resources to provide the major support for research and development of remote sensing techniques for domestic use.

#### Improvements of Price Statistics.

Estimates of the prices received by farmers are used in Government farm programs to determine when payments are triggered and the amount of such payments as well as the price level at which commodities are released or called from the farm grain reserve. The estimates are also used to compute indexes of prices received by farmers, to determine the adjusted base prices for computation of parity prices, and to compute the cash receipts for estimation of gross farm incomes. They are used by agribusiness firms to establish contract prices, and by public, university, and private analysts as economic indicators in analyses of the agricultural sector.

A program to improve the estimates of prices received, begun in 1977, will be completed in 1981. The initial effort centered on converting price surveys for major grains and cotton to a probability basis so that statistical estimates of data reliability could be

provided for prices related to these major commodities. Additional funds were provided to conduct a national market channel survey to identify where producers market their crops and livestock, to conduct a national point of purchase survey to determine where farmers purchase production inputs, to place price surveys for crops on a probability basis, to place livestock prices on a probability basis in 26 of the 38 States for which monthly prices are collected, and to provide improved statistical designs for the six major prices paid surveys.

The program to collect and publish egg prices by utilization (wholesale, retail, breakers, and hatching) will be expanded to include all States estimating egg prices monthly. The current prices received program for crops will be modified and expanded to provide data on wheat by classes and on white corn prices.

#### Comprehensive Natural Resource Data

Base. ESS proposes to develop a comprehensive and nationally consistent land and water resource economic data and monitoring system. The system would be designed to develop and maintain annual and less frequent data series that reflect the status of and investment trends in land and water resources over time for use in national policy analysis. The data would be used to monitor trends in the economic conditions of the resource base and to provide a means of identifying resource problems in need of research. Resulting data series would include soil conservation and water quality measures; landownership, tenure, and values; land use conversions and land improvements; and water use and management.

The system would need to monitor private sector investments in the land



## Meeting Future Information Needs

and water resource base. Data on landownership patterns and land values and use would be gathered and analyzed to show patterns of urbanization, cropland availability, and the supply of land for competing uses. Other data needed are costs and returns of soil conservation and water quality practices, agricultural water use, investments in irrigation and drainage, livestock pollution abatement, and waste disposal.

Specific features of the land and water resource base are planned to be monitored on a rotating basis not to exceed 5 years, and will serve as the basis for published data series. In each instance, surveys will be designed to complement and supplement data gathered by other Federal agencies.

Pesticide Impact Assessment. An expanded program for evaluating the economic implications of potential or actual restrictive actions concerning pesticide use is being planned. It will require developing a close working relationship with Federal and State scientists in identifying biologically and economically viable alternative pesticides and pest control practices and in estimating production losses if these materials are not as effective as the pesticide undergoing review. A primary objective is to provide information for informed decisions on pesticide reregistration and usage and to promote efficiency in food and fiber production without causing adverse effects on people and the environment. Since the program began, the level of assessment activity and the depth of the analyses have been greater than anticipated. The special needs include:

- Strengthening pest control and application surveys to provide data that are valid at the State level, and to include information on type

of mixing and loading equipment used, method of application, and number of workers.

- Shifting to a commodity approach for better assessments of alternative pesticides on particular sites and pests.
- Evaluating relative efficacy, yield, and quality differences for alternative pesticides.
- Evaluating the role of selected pesticides in pest management systems.

Farm Work Force. The shift to specialized market-oriented farm production and farm enlargement increased the hired labor employed per farm in the face of declines in total farm employment. Low incomes, high unemployment and underemployment, poor education, and poor housing of farmworkers all remain serious and persistent rural economic problems. Data on farm labor and characteristics of farmworkers and their households are inadequate. Current needs include:

- A new hired farmworker survey providing statistically reliable estimates of characteristics of major farmworker subgroups in States that use the most hired farm labor.
- Analyses of farmworker supply and demand issues related to specific commodities and geographic areas; for instance, factors affecting the supply of farm labor and the dependence of households on hired farmwork.

## International Trade and Development

The most widely held view of the world food situation during the eighties

foresees continuing increases in global demand for food deriving from increasing population (especially in the developing countries) and growth in per capita real income, a slowing in the rate of increase of agricultural production (as increasingly tight technological and resource constraints are encountered), increased instability in world markets, and growth in agricultural trade as production and consumption imbalances occur in more countries. This will result in increasing dependence on the United States (and a few other exporting countries) by a growing number of food deficit countries. This growing interdependence between the United States and the rest of the world imposes new and expanded demands on our data and knowledge about the rest of the world as well as our analytical capacity to predict the effects of shocks in one part of the world on the rest.

The growing interdependence of U.S. and world agriculture has greatly increased the importance of consistency among domestic agricultural policy, trade policy, domestic food policy, and macroeconomic policy. This places additional emphasis on the need for more and better information about our trading partners and competitors around the world so as to better understand the nature and consequences of this growing interdependence. There is a special need for greater capacity for estimating the effects on U.S. agricultural trade of changes in macroeconomic and monetary conditions and policies in other countries.

At the same time that the world is growing more interdependent, there is an increasing dependence by food deficit countries on the United States. Attempts by low, middle, and high income food deficit countries to

shield their consumers from domestic world supply variation tend to increase the variability of world demand for U.S. agricultural products. Thus it becomes more important that reliable current information about supply and demand conditions in the important importing and exporting countries be available. This improves the ability of U.S. producers, consumers, marketing institutions, and policymakers to anticipate and respond to changing market conditions.

The longrun ability of the world to feed itself requires that the trend toward greater dependence on a declining number of food-exporting countries be reversed. The most rapidly growing need for food is in the developing countries. Economic development in these countries will affect their ability to convert food needs into effective demand. Whether this demand is satisfied domestically or through world trade depends on the nature of the development process. There is need for research that will provide better understanding of the development process and its relationship to the supply of and demand for internationally traded commodities. With numerous developing countries experiencing population growth that exceeds both income and food production growth, there are increasing food aid needs. At the same time, tightening market conditions are increasing the real cost of food aid to donor countries.

The tightening world food supply situation places greater emphasis on the need for better information on the potential resources of other countries to expand production. There is also need for research that will provide a better understanding of the probable supply response of the agricultural



sectors of other countries to rising real prices. Our capacity to model crop yield response to changes in weather and production technology in the various countries of the world also needs to be increased.

To strengthen our program of current situation analysis and reporting, forecasting, and research, emphasis will be placed on the following activities during fiscal 1981:

- Revising the grains, oilseeds, and livestock (GOL) model to make it more appropriate for use in short and intermediate term policy analysis.
- Improving the data base and analytical processes used in assessing food aid needs and availabilities in the developing countries by increasing interaction with the Food and Agriculture Organization of the United Nations. Assessments will be made quarterly.
- Investigating empirically the effects of alternative exchange rates on commodity trade in selected markets. Countries to be studied include Japan and the developed countries of Western Europe, middle income countries with potential for becoming major markets, and competing countries such as Canada and Australia. The research involves specifying and estimating equations that relate exchange rates and other monetary phenomena to internal commodity prices in major trading countries and world market prices. This effort will also produce price linkage equations to be incorporated into the GOL, the world net trade model, and other models that are used to evaluate the effects of exchange rate changes and other monetary variables on commodity trade.
- Analyzing the relationship between economic growth and trade. The study will look at the interrelationships among income growth, population change, and energy prices, and at their net effects on U.S. agricultural trade. This will include estimating income elasticities of import demand for principal U.S. agricultural exports. The major emphasis will be on estimating income elasticities of import demand for the middle income countries that are large potential markets for U.S. agricultural exports.
- Developing methodologies for estimating the effects of macroeconomic and monetary variables on U.S. agricultural trade. The study will review and evaluate the manner in which agriculture is treated in existing macroeconomic models and the manner in which macroeconomic phenomena have been introduced into agricultural commodity market and trade models. A synthesis and extension will be attempted to more adequately introduce macroeconomic variables into agricultural trade models.
- Analyzing resource and technology constraints to increasing production in developing countries. These studies will focus on assessment of land and water resource availability and energy use in selected countries as constraints on production expansion. Development strategy studies will also be undertaken for selected African countries.

## Publications and Information Services

ESS makes available a wide gamut of information through printed reports and computer data hookups. Described below are those reports that are published regularly, followed by a list of research reports published in fiscal 1980. Ordering information is included.

Reports available on subscription should be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402; please include your name and address, the periodical you want, and a check or money order payable to Superintendent of Documents.

Many of the reports below are free of charge, while supplies last, from ESS. To add your name to the mailing list, or to receive the most recent copy, send your request to ESS Publications, Room 0054-S, U.S. Department of Agriculture, Washington, D.C. 20250; or call (202) 447-7255.

**AGRICULTURAL ECONOMICS RESEARCH.** Quarterly. Technical articles deal with methods, results, and findings of research in agricultural economics, statistics, and marketing. Annual subscriptions from GPO: \$8, domestic; \$10, foreign.

**AGRICULTURAL OUTLOOK.** Published 11 times a year. Update and analysis of the developments affecting the outlook for the U.S. food and fiber system. Highlights the major interrelated developments in farming, input industries, and produce marketing, and potential impacts on U.S. agriculture and the consumer. Annual subscriptions from GPO: \$19, domestic; \$23.75, foreign.

**AGRICULTURAL STATISTICS.** Annual. Comprehensive statistical report containing current and historical

agricultural data. Free distribution to libraries and Members of Congress. Others can buy it through GPO.

**CROP REPORTS.** The ESS Crop Reporting Board issues 475 statistical reports each year covering domestic crops, livestock, dairy, and related topics. The reports provide detailed estimates of production, stocks, inventories, disposition, use, and prices of commodities, and coverage of farm labor and wages, farm numbers, and acreage in production. Reports are released at specified times each year for field crops, stocks, fruits, vegetables, seed crops, livestock and products, poultry and eggs, milk and dairy products, and agricultural prices. Other reports published regularly cover the following topics: cold storage, fertilizers, farm labor, farm numbers, farm production expenditures, floriculture crops, honey, maple syrup, mink, mushrooms, and naval stores (turpentine, rosin, etc.). For more details, write for a copy of the CROP REPORTING BOARD CATALOG to: Crop Reporting Board, Room 0005-S, USDA, Washington, D.C. 20250.

The Crop Reporting Board also offers a COMPUTER RELEASE SYSTEM so that farmers and others can get published information more quickly. Important tables and highlights of selected Crop Reporting Board publications on crop and livestock estimates are routed through a computer network to desktop terminals within 15 minutes of the release of the printed report. In the coming year, the system will be expanded to accommodate all ESS situation report summaries as well as highlights and important tables from all Crop Reporting Board publications. For more information, contact the Crop Reporting Board, Room 0233-S, USDA,



## Publications and Information Services

Washington, D.C. 20250 or the system's commercial vendor:

Bob Dworkowski  
Martin Marietta Data Systems  
6801 Rockledge Drive  
Bethesda, Md. 20034  
(301) 897-6388

**FARMERS' NEWSLETTERS.** Separate newsletters (each issued about 5 times per year) cover five commodities: wheat, feed grains, livestock, soybeans, and cotton. A sixth newsletter is on general agricultural topics: interest rates, exports, fuel supplies and prices, fertilizer supplies, grain reserves, and policy. Write to Farmers' Newsletters, Room 0054-S, USDA, Washington, D.C. 20250; identify which letter you want. Sorry, domestic subscriptions only.

**FARMLINE.** Published 11 times a year. Gives an overall picture of trends in agriculture. Covers developments in rural life, natural resources, farm finances, and other topics that affect farm families. Annual subscriptions from GPO: \$10, domestic; \$12.50, foreign.

**FOREIGN AGRICULTURAL TRADE OF THE UNITED STATES.** Bimonthly. Statistical and analytical review of U.S. agricultural trade, including exports under Government-financed programs, commercial exports, price developments, and quantity indexes for selected commodity groups. Two STATISTICAL SUPPLEMENTS are published each year, one for the calendar year and one for the fiscal year. Order from ESS Publications.

**HANDBOOK OF AGRICULTURAL CHARTS.** Annual. Charts and accompanying data on key factors in the economic situation and outlook for agriculture. Order from ESS Publications.

**NATIONAL FOOD REVIEW.** Quarterly. Articles cover the latest USDA policy and research findings in areas of nutrition, food safety and quality, food marketing, and food assistance. Annual subscriptions from GPO: \$5.50, domestic; \$6.90, foreign.

**OUTLOOK AND SITUATION REPORTS.** Each issued 4 or 5 times a year. Separate reports analyze demand, prices, and outlook for the following subjects: livestock and meat; poultry and eggs; fats and oils; sugar and sweeteners; tobacco; cotton and wool; dairy; rice; wheat; vegetables; fruit; feed; agricultural finance; fertilizer; agricultural exports; world agriculture; farm real estate market developments; and price spreads for farm foods. Order through ESS Publications; be sure to indicate which topics you want.

**ESS PERIODIC REPORTS.** Most are annual and are published on the topics listed below. Write to ESS Publications for latest copy or to be put on the mailing list. Be sure to specify the report(s) you want.

Food Policy and Food Costs.  
Agricultural-Food Policy Review;  
Developments in Price Spreads for Farm Foods; Food Consumption, Prices, and Expenditures.

Farm Cost, Returns, and Efficiency.  
Costs of Producing Selected Crops;  
Costs of Producing Hogs; Costs of Producing Sheep; Costs of Producing Feeder Cattle; Costs of Producing Fed Cattle; Costs of Producing Milk; U.S. Fats and Oils Statistics (every other year); Statistics on Cotton and Related Data; Livestock and Meat Statistics; Poultry and Egg Statistics; Dairy Statistics; Developments in Marketing Spreads for Food Products; Evaluation of Pesticide Supplies and Demand.

Farm Finance. Farm Mortgage Debt; Agricultural Finance Review; Farm Real Estate Taxes.

Rural Population. Farm Population of the United States (jointly with the Bureau of the Census); Hired Farm Work Force.

Foreign Agriculture. Foreign Ownership of U.S. Agricultural Land; Global Food Assessment; Indices of Agricultural Production. Regional Situation Reports and data (covering agricultural output, use, trade, trends, and significant policy developments) on Western Hemisphere, Western Europe, Eastern Europe, Soviet Union, China, Asia, and Africa.

Economic Indicators of the Farm Sector. This new four-volume series will replace Balance Sheet of the Farming Sector, Farm Income Statistics, State Farm Income Statistics, and Changes in Farm Production and Efficiency. The four volumes will be: Income and Balance Sheet Statistics, State Income and Asset Accounts, Production and Efficiency Statistics, and Costs of Production.

Weekly Weather and Crop Bulletins. Summaries of weather and its effects on crops and farm progress for the previous week, by State. Published weekly in cooperation with the National Weather Service and the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce. Order from Agricultural Weather Facility, Room 3526-S, USDA, Washington, D.C. 20250. Annual subscriptions: \$13, domestic; \$18, foreign; check or money order payable to U.S. Department of Commerce.

World Crop Production Report. Monthly. Provides estimates for wheat, rice, coarse grains, oilseeds, and cotton in major countries. Published jointly by ESS, the World Food and Agricultural Outlook and Situation Board, Foreign Agricultural Service, and Office of the General Sales

Manager. Write to FAS Information Services Staff, Room 5918-S, USDA, Washington, D.C. 20250.

RESEARCH REPORTS. Approximately 175 research reports, bulletins, and handbooks are published each year by ESS covering virtually all topics of agricultural research, including commodity production, marketing, natural resources, rural development, and foreign agriculture. Copies are free upon request, and while supplies last, from ESS Publications. After the free supplies are exhausted, paper copies and microfiche copies can be purchased from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Va. 22161.

ESS RESEARCH ABSTRACTS. Approximately bimonthly. Lists abstracts and bibliographic data for all ESS research reports published in the preceding 2 months. Write to ESS Publications.

ABSTRACTS OF ESS STAFF REPORTS. Two or three times per year. Lists abstracts and titles of all unpublished ESS staff reports released in the previous months. Write to ESS Publications.

ESS also maintains a COMPUTERIZED BIBLIOGRAPHIC DATA BASE that gives researchers access to AG-ECON, COINS, AGRICOLA, and more than 100 other data files. Included in the AG-ECON data base are abstracts and bibliographic information of all published ESS reports, all ESS staff reports, and many papers and articles dealing with agricultural economics published by universities and professional journals. The data files can be searched through computer terminals located at many universities, Federal libraries, and the ESS Reference Center, 500 12th Street, S.W., Washington, D.C. 20250, or call (202) 447-4382. Trained analysts will, for a



fee, do the computer searching for you at the universities, libraries, and ESS Reference Center. For additional information on search services, contact your local library or the commercial vendors:

Bibliographic Retrieval Services,  
Inc.  
Marketing and Educational Services  
P.O. Box 17005  
Minneapolis, Minn. 55417  
(612) 376-7244

Lockheed Information Systems  
3251 Hanover Street  
Palo Alto, Calif. 94304  
(415) 493-4411 ext 45635

Systems Development Corp.  
SDC Search Service  
2500 Colorado Avenue  
Santa Monica, Calif. 90405  
(213) 393-9411 ext 7277

The research reports listed below were published during fiscal 1980 and can be ordered from ESS Publications.

Agricultural Economic Reports

- AER-437. THE HIRED FARM WORKING FORCE OF 1977, by Gene Rowe. October 1979. 56 pp.
- AER-438. STRUCTURE ISSUES OF AMERICAN AGRICULTURE, by J. B. Penn and others. November 1979. 316 pp.
- AER-439. CONSUMER ATTITUDES TOWARD FOOD LABELING AND OTHER SHOPPING AIDS, by Richard B. Smith, Judy A. Brown, and Jon P. Weimer. October 1979. 40 pp.
- AER-440. MAJOR USES OF LAND IN THE UNITED STATES: 1974, by H. Thomas Frey. November 1979. 40 pp.
- AER-441. ANOTHER REVOLUTION IN U.S. FARMING? by Lyle P. Schertz and others. December 1979. 464 pp.
- AER-442. INTERPRETING LAND USE CHANGE THROUGH SATELLITE IMAGERY, by Linda K. Lee. December 1979. 21 pp.
- AER-443. ASSESSMENT OF PROPOSED NET WEIGHT LABELING REGULATIONS FOR MEAT AND POULTRY PRODUCTS, by Charles Handy, Benjamin Sexauer, and Linda Weingarten. December 1979. 57 pp.
- AER-444. TRANSPORTATION FUEL REQUIREMENTS IN THE FOOD AND FIBER SYSTEM, by John A. Barton. January 1980. 45 pp.
- AER-445. PRODUCING PRO-XAN (LEAF PROTEIN CONCENTRATE) FROM ALFALFA: ECONOMICS OF AN EMERGING TECHNOLOGY, by Robert Enochian and others. January 1980. 42 pp.
- AER-446. PROGRESS TOWARD ELIMINATING HUNGER IN AMERICA, by William Boehm, Paul Nelson, and Kathryn Longen. January 1980. 39 pp.
- AER-447. FOREIGN OWNERSHIP OF U.S. AGRICULTURAL LAND. February 1980. 37 pp.
- AER-448. EFFECTS OF NATURAL GAS PRICE INCREASES ON TEXAS HIGH PLAINS IRRIGATION, 1976-2025, by Kenneth B. Young and Jerry M. Coomer. February 1980. 35 pp.
- AER-449. DEVELOPMENTS IN MARKETING SPREADS FOR FOOD PRODUCTS IN 1979. March 1980. 55 pp.
- AER-450. STRUCTURAL CHARACTERISTICS OF BEEF CATTLE RAISING IN THE UNITED STATES, by Calvin C. Boykin, Henry C. Gilliam, Jr., and Ronald A. Gustafson. March 1980. 113 pp.
- AER-451. THE U.S. FOOD AND TOBACCO MANUFACTURING INDUSTRIES: MARKET STRUCTURE, STRUCTURAL

CHANGE, AND ECONOMIC  
PERFORMANCE, by John M.  
Conner. March 1980. 124  
pp.

AER-452. SHEEP PRODUCTION: INTENSIVE  
SYSTEMS, INNOVATIVE  
TECHNIQUES BOOST YIELDS, by  
Virden L. Harrison. March  
1980. 52 pp.

AER-453. SOLAR-ASSISTED COMBINATION  
GRAIN DRYING: AN ECONOMIC  
EVALUATION, by Walter G.  
Heid, Jr. May 1980. 20 pp.

AER-454. EVALUATION OF PESTICIDE  
SUPPLIES AND DEMAND FOR 1980,  
by Theodore R. Eichers.  
March 1980. 24 pp.

AER-456. FOREIGN INVESTMENT IN THE  
U.S. FOOD AND AGRICULTURAL  
SYSTEM: AN OVERVIEW, by  
Kenneth R. Krause. April  
1980. 96 pp.

AER-457. U.S. SORGHUM INDUSTRY, by  
David M. Jackson, Warren R.  
Grant, and Carl E. Shafer.  
June 1980. 99 pp.

AER-458. GASOHOL: PROSPECTS AND  
IMPLICATIONS, by Ronald  
Meekhof, Mohinder Gill, and  
Wallace Tyner. June 1980.  
36 pp.

AER-459. COSTS OF REDUCING GRAIN  
FEEDING OF BEEF CATTLE, by  
Ray F. Brokken, Carl W.  
O'Conner, and Thomas L.  
Nordblom. August 1980. 32  
pp.

AER-460. BURLEY TOBACCO FARMING  
CHARACTERISTICS AND POTENTIAL  
FOR CHANGE, by Verner N.  
Grise and Owen K. Shugars.  
September 1980. 48 pp.

AER-461. THE FARM PESTICIDE INDUSTRY,  
by Theodore R. Eichers.  
September 1980. 32 pp.

#### Agriculture Information Bulletins

AIB-430. BALANCE SHEET OF THE FARMING  
SECTOR, 1979, by Carson D.  
Evans. February 1980  
(supplement). 69 pp.

AIB-432. SLAUGHTER-CATTLE PRICING AND  
PROCUREMENT PRACTICES OF  
MEATPACKERS, by Clement E.  
Ward. December 1979. 29  
pp.

AIB-434. U.S. FARM ACCIDENT  
FATALITIES, 1970-76, by  
Conrad F. Fritsch and John M.  
Zimmer. February 1980. 35  
pp.

AIB-435. LANDOWNERSHIP IN THE UNITED  
STATES, 1978, by James A.  
Lewis. April 1980. 104 pp.

AIB-436. FARMER-TO-CONSUMER DIRECT  
MARKETING IN SIX STATES, by  
Peter L. Henderson and Harold  
R. Linstrom. July 1980. 52  
pp.

AIB-437. NURSING HOME FEASIBILITY  
GUIDE FOR LOCAL  
DECISIONMAKERS IN THE RURAL  
OZARKS, by John A. Kuehn,  
Damian Suits, Bob McGill, and  
Marlys K. Nelson. August  
1980. 36 pp.

#### Foreign Agricultural Economic Reports

FAER-156. VARIABLE LEVIES: BARRIERS TO  
GRAIN IMPORTS IN FRANCE, THE  
NETHERLANDS, FEDERAL REPUBLIC  
OF GERMANY, AND UNITED  
KINGDOM, by Cathy L. Jabara  
and Alan S. Brigida. March  
1980. 24 pp.

FAER-157. NORWEGIAN NUTRITION AND FOOD  
POLICY, by Marshall M.  
Cohen.  
May 1980. 40 pp.

FAER-159. GLOBAL FOOD ASSESSMENT,  
1980. July 1980. 120 pp.



Rural Development Research Reports

- RDRR-16. EFFECTS OF GEOGRAPHIC COST OF LIVING ADJUSTMENTS ON WELFARE BENEFITS, by Robert A. Hoppe. December 1979. 21 pp.
- RDRR-17. MORTGAGED RURAL HOMES--CHARACTERISTICS OF HOUSING UNITS AND OCCUPANTS, by Hughes H. Spurlock. November 1979. 32 pp.
- RDRR-18. ASSESSMENT OF EMPLOYMENT AND UNEMPLOYMENT STATISTICS FOR NONMETROPOLITAN AREAS, by Sigurd R. Nilsen. December 1979. 25 pp.
- RDRR-19. COSTS OF STRIP MINE RECLAMATION IN THE WEST, by Kenneth L. Leathers. February 1980. 86 pp.
- RDRR-20. COORDINATING FEDERAL PROGRAMS: THE CASE OF OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-95, by Jerome M. Stam. March 1980. 25 pp.
- RDRR-21. THE EDUCATION OF NONMETRO BLACKS, by Frank A. Fratoe. July 1980. 24 pp.
- RDRR-22. SIZE ECONOMIES IN LOCAL GOVERNMENT SERVICES: A REVIEW, by William F. Fox. August 1980. 40 pp.
- RDRR-23. FEDERAL PROGRAMS SUPPORTING MULTICOUNTY SUBSTATE REGIONAL ACTIVITIES: AN OVERVIEW, by Jerome M. Stam and J. Norman Reid. August 1980. 56 pp.
- RDRR-24. NONMETRO JOB GROWTH AND LOCATIONAL CHANGE IN MANUFACTURING FIRMS, by James P. Miller. August 1980. 32 pp.
- RDRR-25. FEDERAL OUTLAYS IN FISCAL 1978: A COMPARISON OF METROPOLITAN AND NONMETROPOLITAN AREAS, by Charles I. Hendler and J. Norman Reid. September 1980. 76 pp.

Statistical Bulletins

- SB-617-S. SUPPLEMENT FOR 1980 TO STATISTICS ON COTTON AND RELATED DATA, 1960-78, by Mildred V. Jones. April 1980. 96 pp.
- SB-62/. STATE FARM INCOME STATISTICS. January 1980 (supplement). 96 pp.
- SB-628. CHANGES IN FARM PRODUCTION AND EFFICIENCY, 1978. January 1980. 71 pp.
- SB-630. SELECTED AGRICULTURAL STATISTICS ON SPAIN, 1965-76. March 1980. 188 pp.
- SB-631. U.S. FATS AND OILS STATISTICS, 1963-78. March 1980. 108 pp.
- SB-632. ENERGY AND U.S. AGRICULTURE: 1974 and 1978, by David Torgerson and Harold Cooper. April 1980. 120 pp.
- SB-635. INDICES OF AGRICULTURAL AND FOOD PRODUCTION FOR EUROPE AND THE USSR: AVERAGE 1961-65 AND ANNUAL 1970 THROUGH 1979, by Boyd Chugg. June 1980. 88 pp.
- SB-636. INDICES OF AGRICULTURAL PRODUCTION FOR ASIA AND OCEANIA, AVERAGE 1961-65 AND ANNUAL 1970-79. June 1980. 32 pp.
- SB-637. INDICES OF AGRICULTURAL PRODUCTION IN AFRICA AND THE NEAR EAST, 1970-79. June 1980. 60 pp.
- SB-639. INDICES OF AGRICULTURAL PRODUCTION FOR THE WESTERN HEMISPHERE EXCLUDING THE UNITED STATES AND CUBA, 1970 THROUGH 1979. July 1980. 40 pp.
- SB-640. U.S. RICE DISTRIBUTION UPDATE, by Shelby H. Holder, Jr., and David Martella. July 1980. 56 pp.

### Technical Bulletins

- TB-1611. A SYSTEMS ANALYSIS OF GRAIN RESERVES, by David J. Eaton. January 1980. 128 pp.
- TB-1614. MEASUREMENT OF U.S. AGRICULTURAL PRODUCTIVITY: A REVIEW OF CURRENT STATISTICS AND PROPOSALS FOR CHANGE. February 1980. 54 pp.
- TB-1615. JOINT MUNICIPAL AND INDUSTRIAL WASTEWATER TREATMENT IN RURAL COMMUNITIES: SIMULATION ANALYSIS WITH POULTRY PROCESSING PLANTS, by Daniel Rossi and others. March 1980. 68 pp.
- TB-1619. PUBLIC SERVICE EMPLOYMENT: THE IMPACT ON WASHINGTON STATE'S NONMETROPOLITAN LABOR MARKETS, by Mark J. Morlock. March 1980. 32 pp.
- TB-1621. RELATIONSHIPS BETWEEN SIZE OF SCHOOLS AND SCHOOL DISTRICTS AND THE COST OF EDUCATION, by William F. Fox. April 1980. 32 pp.
- TB-1622. USE OF MULTIPLE REGRESSION ANALYSIS TO SUMMARIZE AND INTERPRET LINEAR PROGRAMMING SHADOW PRICES IN AN ECONOMIC PLANNING MODEL, by Daniel G. Williams. May 1980. 44 pp.
- TB-1625. U.S. FARM NUMBERS, SIZES, AND RELATED STRUCTURAL DIMENSIONS: PROJECTIONS TO YEAR 2000, by William Lin, George Coffman, and J. B. Penn. July 1980. 88 pp.
- TB-1627. WESTERN ENERGY: THE INTERREGIONAL COAL ANALYSIS MODEL, by John W. Green. August 1980. 264 pp.
- TB-1633. THE FOOD MARKETING COST INDEX: A NEW MEASURE FOR ANALYZING FOOD PRICE CHANGES, by Harry H. Harp. August 1980. 28 pp.

### Other Research Reports

- AH-561. 1979 HANDBOOK OF AGRICULTURAL CHARTS, Economics, Statistics, and Cooperatives Service, October 1979. 144 pp.
- AFPR-3. AGRICULTURAL FOOD POLICY REVIEW. February 1980. 87 pp.
- AFR-39. AGRICULTURAL FINANCE REVIEW. November 1979. 144 pp.
- AFR-40. AGRICULTURAL FINANCE REVIEW. April 1980. 68 pp.
- BLA-6. BIBLIOGRAPHY OF ECONOMIC REGULATION OF AGRICULTURAL AND NONAGRICULTURAL INDUSTRIES, 1960-79, by Winston W. Grant and Dale C. Dahl. February 1980. 52 pp.
- BLA-7. WOOD AND ENERGY IN NEW ENGLAND: A REVIEW AND BIBLIOGRAPHY, by Lynn Palmer, Robert McKusick, and Mark Bailey. April 1980. 80 pp.
- MP-1379. HISTORY OF FEDERAL WATER RESOURCES PROGRAMS AND POLICIES, 1961-70, by Beatrice Hort Holmes. September 1979. 340 pp.
- GPO. GROCERY RETAILING CONCENTRATION IN METROPOLITAN AREAS, ECONOMIC CENSUS YEARS 1954-72, by Gerald E. Grinnell, Russell C. Parker, and Lawrence A. Rens. October 1979. 316 pp. (Order number 018-000-00257-4 from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Cost: \$7.00.)

### Senate Committee Prints

- COSTS OF PRODUCING SELECTED CROPS IN THE UNITED STATES—1978, 1979, AND PROJECTIONS FOR 1980. July 1980.



COSTS OF PRODUCING FED CATTLE IN THE UNITED STATES--FINAL 1978, PRELIMINARY 1979, AND PROJECTIONS FOR 1980. July 1980.

COSTS OF PRODUCING FEEDER CATTLE IN THE UNITED STATES--FINAL 1978, PRELIMINARY 1979, AND PROJECTIONS FOR 1980. July 1980.

COSTS OF PRODUCING MILK IN THE UNITED STATES--FINAL 1978, PRELIMINARY 1979, AND PROJECTIONS FOR 1980. July 1980.

COSTS OF PRODUCING SHEEP IN THE UNITED STATES--FINAL 1977 AND 1978, PRELIMINARY 1979, AND PROJECTIONS FOR 1980. July 1980.

#### Agency Series

ESCS-61. REPORT ASSESSING GLOBAL FOOD PRODUCTION AND NEEDS AS OF APRIL 15, 1979, by Patrick O'Brien and others. October 1979. 92 pp.

ESCS-72. PRODUCING FRESH WINTER VEGETABLES IN FLORIDA AND MEXICO: COST AND COMPETITION, by G. A. Zepp and R. L. Simmons. November 1979. 96 pp.

ESCS-73. PROCEEDINGS OF SYMPOSIUM ON FARM ESTATE ISSUES RAISED BY THE TAX REFORM ACT OF 1976. November 1979. 108 pp.

ESCS-74. ROADS OF RURAL AMERICA, by Arvin Bunker and T. Q. Hutchinson. December 1979. 60 pp.

ESCS-75. TEXTILES: U.S. TRADE AGREEMENTS, IMPORTS, AND CONSUMPTION, by Christine J. Hager. December 1979. 19 pp.

ESCS-76. ECONOMICS, STATISTICS, COOPERATIVES: PROGRAM RESULTS AND PLANS. December 1979. 63 pp.

ESCS-77. MILK PROCESSOR SALES, COSTS, AND MARGINS, by W. Webster Jones and Floyd A. Lasley. January 1980. 19 pp.

ESCS-78. PRODUCING FRESH TOMATOES IN

CALIFORNIA AND BAJA CALIFORNIA: COSTS AND COMPETITION, by G. A. Zepp and R. L. Simmons. February 1980. 40 pp.

ESCS-79. MARKETING U.S. COTTON TO DOMESTIC AND FOREIGN OUTLETS IN 1977/78: PRACTICES AND COSTS, by Edward H. Glade, Jr., and Joseph L. Ghetti. February 1980. 17 pp.

ESCS-80. PATTERNS OF MEAT DISTRIBUTION: A CASE STUDY OF ST. LOUIS, by Allen J. Baker. March 1980. 44 pp.

ESCS-81. DOMESTIC FOOD PROGRAMS: AN OVERVIEW, by Kathryn Longen. August 1980. 40 pp.

ESCS-82. OWNER-OPERATOR COSTS OF HAULING FRESH FRUITS AND VEGETABLES IN REFRIGERATED TRUCKS, by Patrick P. Boles. July 1980. 26 pp.

ESCS-83. PROCEEDINGS: 24th NATIONAL CONFERENCE OF BARGAINING AND MARKETING COOPERATIVES, JANUARY 10-11, 1980, NEW ORLEANS, LOUISIANA. July 1980. 96 pp.

ESCS-84. CHARGES FOR GINNING COTTON, COSTS OF SELECTED SERVICES INCIDENT TO MARKETING, AND RELATED INFORMATION, 1979/80 SEASON, Edward H. Glade, Jr., and Ron Cole. July 1980. 2 pp.

ESCS-85. SOME PROBLEMS IN MEASURING FOOD ASSISTANCE PROGRAM IMPACTS ON STATE AND LOCAL ECONOMIES, by Doris J. Epsom and Paul E. Nelson. August 1980. 24 pp.

ESCS-86. U.S. FARM POPULATION, 1979, by Vera J. Banks and Judith Z. Kalbacher. August 1980. 4 pp.

ESCS-87. COOPERATIVE FREIGHT BILL AUDITING, by Earl B. Miller and Eldon Brooks. August 1980. 24 pp.

## Field Stations and Cooperation With Universities

For the past decade, about 20 percent of the Economics staff of ESS has been stationed outside of Washington, D.C. ESS currently has 41 field stations established to conduct research on problems at the State and regional level and where unique centers of research excellence exist, usually at Land Grant Universities. The names of the senior researchers stationed at those offices, plus statisticians in charge stationed at the 44 State Statistical Offices, are listed at the end of this section.

The Natural Resource Economics Division maintains a fairly large field staff to work on the USDA Cooperative River Basin Studies, which evaluates plans for development, management, and conservation of land and water resources.

The National Economics Division's field researchers conduct long-term studies on commodity production, agricultural policy, agricultural finance, and related issues at Land Grant Universities in the major crop and livestock production regions. The expertise of the universities' personnel complements that of NED's researchers. In addition to stationing staff in the field, ESS supports universities' research programs through cooperative research agreements and by lending professional staff where a university department or group of departments has special interest, expertise, and motivation in a particular area of research that complements or supplements the Agency's.

Cooperative research agreements with universities totaled \$2.9 million in fiscal 1980. ESS also provides financial support, as well as professional staff support, to various

regional research projects, the most noteworthy being the NC-117 project--a regional project on the organization and performance of the U.S. food system and the degree and effect of competition within it. Direct support to NC-117 in fiscal 1980 was \$157,000; fiscal 1981 plans call for \$138,000.

To foster better coordination with the universities, ESS invited a group of university department representatives to preview its research plans for fiscal 1980 and 1981 and to suggest how those plans could be coordinated with the universities' own research activities.

The locations of the ESS field stations and research problems currently being investigated at each are listed below.

Auburn, Ala. River Basin Studies--analytical model for land and water resources.

Anchorage, Alaska. River Basin Studies--natural resources in selected river basins, including the Susitna Basin.

Tucson, Ariz. Statewide analytical model for water management strategies. Water use and management on Indian reservations. Economic impacts of conserving water in eight Western States by scheduling irrigation according to economic application rules.

Fayetteville, Ark. Research on crop production, especially rice.

Little Rock, Ark. River Basin Studies--water and land use and management in selected river basins in Arkansas, Tennessee, Mississippi, and Louisiana. Methods for estimating



## Field Stations and Cooperation With Universities

flood damages. Resource Conservation and Development projects.

Berkeley, Calif. River Basin Studies--water management plans in the Sacramento Basin and in selected basins in Colorado and New Mexico. Development of a statewide analytical model.

Davis, Calif. The 160-acre limitation on irrigation projects (for Department of Interior). Mechanization of fruit and vegetable production. Control of disease problems in agricultural production. Pollution abatement in irrigation return flows in San Joaquin Valley (for Environmental Protection Agency), using economic/physical models.

Riverside, Calif. New biological and cultural pest control methods and integrated pest management systems and large scale pest management programs.

Ft. Collins, Col. Economies of size in agricultural production, part of a longer USDA study of the structure of U.S. agriculture. Public land management data and analysis for U.S. Forest Service and Bureau of Land Management. Consequences to irrigators and other water users of maintaining minimum streamflows for fish and wildlife purposes in selected Western rivers. Market mechanisms to allocate water in drought situations in selected Western States. Energy use and development on agriculture and natural resources. Economic evaluation of renewable resources on natural and managed range.

Gainesville, Fla. Vegetable production and competition between U.S. and Mexican producers in supplying winter vegetables to the United States. New biological and cultural pest control methods and integrated pest management systems.

Athens, Ga. Crop production, poultry production, and the use of solar energy in agricultural production. River Basin Studies--development of water and land resources in selected basins of southwest Georgia and northern South Carolina.

Athens and Experiment, Ga. Water quality practices, programs, and alternatives (Altamaha Basin, Ga.) for nonpoint source pollution abatement, tillage practices for selected crops in the Southeast, and their costs and yields impacts.

Urbana, Ill. Production, marketing, and distribution of grains and forage. Structure, organization, and costs and returns of livestock production in the Corn Belt. Financial structure of the farm production sector.

Peoria, Ill. Sweeteners in the food industry, potential of high fructose corn syrup and its potential impact on use and price of other sweeteners.

Lafayette, Ind. Linkages between domestic policy and international aspects, including grain reserves.

Ames, Iowa. National programming models in resource policy/program analysis (in conjunction with Center for Agricultural and Rural Development, Iowa State University). River Basin Studies--water and related land resource problems in Des Moines Basin, including economic aspects of soil depletion.

Manhattan, Kans. Solar energy systems for grain drying. Cost of pelleting grain dust collected in grain storage and processing.

Beltsville, Md. New biological and cultural pest control methods and integrated pest management systems. Recycling municipal wastes on agricultural land.

East Lansing, Mich. Structure and performance of fruits and vegetable industries. NC-117 regional project on organization and control of the U.S. food system: current studies on marketing and distribution of fruits and vegetables. Economic/hydrologic models for implications of resource use, and for reducing flood impacts and nonpoint pollution from small watersheds. Off-site water quality impacts. CRIES (Comprehensive Resource Inventory and Evaluation System), a technical assistance activity emphasizing resource inventory, evaluation, and resource policy/program analysis. River Basin Studies--water and land resources in selected basins in Ohio, Wisconsin, Indiana, and Kentucky.

St. Paul, Minn. Policy issues relating to U.S. dairy industry. State and local government finances and services in rural areas. Communities affected by expanding coal and other energy development in Northern Great Plains and similar mining developments in rural Minnesota.

Mississippi State, Miss. Characteristics of small farm operators and types of small farmers most in need of public assistance, especially black farm operators, and potential impact of methods of improving family income.

Stoneville, Miss. Cotton production systems to reduce costs of production; analyses of USDA-sponsored boll weevil eradication trials.

Columbia, Mo. Agricultural policy issues. Decisionmaking problems of rural governments in southwest Missouri and northeast Oklahoma. Simplified guides to help local officials in Ozarks (and areas with similar problems) make more informed decisions about fire services, health services,

sewer and water, and similar problems. River Basin Studies--water and related land resource problems in major tributaries of the Lower Missouri River, emphasizing economics of soil conservation practices.

Bozeman, Mont. Impacts of coal and other energy development in sparsely populated areas of the Northern Great Plains.

Clay Center, Nebr. Economic analysis of technological developments in meat animal production.

Lincoln, Nebr. Landowner/farm operator participation in soil conservation in the Great Plains through improved irrigation practices. Alternative tillage and water quality practices on yields and wind and water erosion in improved irrigation practices through the Great Plains. River Basin Studies--soil depletion and related problems in selected basins; similar studies in Wyoming. The effects of center pivot irrigation on landownership and control.

Durham, N.H. Dairy farms enterprise budgets and estimated costs of production.

Ithaca, N.Y. Conversion of agricultural lands to nonagricultural uses.

Raleigh, N.C. Beef and pork production in the Southeast--structure, organization, costs, and returns. Macro model for forecasting and simulating food-price movement. Problems of State and local governments in rural areas, most recently, State and local government employment, with emphasis on the Southeast. Conversion of land to and from agricultural use--effects of landownership characteristics.



Fargo, N. Dak. Impacts of coal and other energy development in sparsely populated areas of Northern Great Plains.

Stillwater, Okla. Enterprise budgets and cost of production estimates for major crops and livestock. Rural local governments' decisionmaking problems (see description under Columbia, Mo.) Trends in irrigation pumping and energy use. Costs of pump irrigation--impact of inflation, declining water tables, and technology.

Corvallis, Oreg. Animal products research--beef cattle production systems, including production functions for beef cattle and management strategies for various types of beef cow enterprises.

Economic/environmental tradeoffs in the Columbia Plateau River Basin Study, using economic/physical models. Nonpoint source pollution abatement (coordinated with Environmental Protection Agency). Role and function of the rural hospital in the West, especially since the end of the Hill-Burton program. River Basin Studies--water and related land resources in Oregon, Washington, Idaho, and Montana. Effects of policy instruments on conversion of agricultural land to nonagricultural uses.

Broomall, Pa. Water quality studies in southeast Pennsylvania--phosphorus and algae levels.

University Park, Pa. Poultry industry--costs and practices in broiler production, restrictions on feed additives. Effects of landownership on agricultural land use. Investments and disinvestments in conservation practices; costs associated with sediment in surface

water; wastewater treatment alternatives with emphasis on land application. Changes in industry and employment in rural communities (in cooperation with University personnel in several Northeastern States). River Basin Studies--conservation of water and related land resources and preservation of prime farmland in Maine, Vermont, New Jersey, Massachusetts, Maryland, and Pennsylvania.

College Station, Tex. Rice production, marketing, and international trade. Livestock production, processing, and marketing. Farm financial management, industry aggregate measures of income flows, returns to equity capital, and returns to capital resources.

Lubbock, Tex. Cotton production, grading, and processing. Instrument classing of cotton and new technologies in cotton processing.

Temple, Tex. Multidisciplinary crop yield modeling team (with USDA's Science and Education Administration and Soil Conservation Service).

Salt Lake City, Utah. Full cost pricing of water as an alternative to administrative regulation of acreages receiving Federal water.

Pullman, Wash. Longrun average cost curves for typical farms in the ESS typical farm series.

Morgantown, W. Va. River Basin Studies--water and related land resources in the Upper Potomac Basin. Impacts of energy use and development on agricultural and natural resources.

Madison, Wis. Structure and performance of the food manufacturing and related industries (NC-117 regional project on the organization and control of the U.S. food production and

distribution system). Agricultural impacts, recreational and property value benefits, and public reaction to lake improvement projects (part of the Environmental Protection Agency's clean lakes study). Land information systems and landownership and control.

### **ESS Agricultural Statisticians in Charge of State Offices**

D. S. Findley  
831 Aronov Bldg.  
474 S. Court St.  
Montgomery, Ala. 36104

D. A. Brown  
Hillstrom Bldg.  
Chugach and Fireweed Sts.  
Palmer, Alaska 99645

H. M. Mayes  
3001 Federal Bldg.  
Phoenix, Ariz. 85025

D. H. Von Steen  
3402 Federal Office Building  
Little Rock, Ark. 72201

R. A. McGregor  
1220 N Street, Room 243  
Sacramento, Calif. 95814

L. D. Jewell  
2490 W. 26th Avenue, Room 245  
Denver, Colo. 80211

R. P. Small  
1222 Woodward Street  
Orlando, Fla. 32803

F. T. Galloway  
Stephens Federal Bldg., Suite 320  
Athens, Ga. 30613

L. P. Garrett  
State Department of Agriculture Bldg.  
1428 S. King Street  
Honolulu, Hawaii 96814

R. C. Max  
304 N. 8th Street, Room 446  
Boise, Idaho 83702

J. R. Kendall  
218 Federal Bldg.  
Springfield, Ill. 62701

E. L. Park  
Agricultural Administration Bldg.  
Purdue University  
West Lafayette, Ind. 47907

D. M. Skow  
210 Walnut Street  
833 Federal Bldg.  
Des Moines, Iowa 50309

M. E. Johnson  
444 S.E. Quincy Street, Room 290  
Topeka, Kans. 66683

D. D. Williamson  
645 Old Post Office and  
Court House Bldg.  
Louisville, Ky. 40201

B. A. Nelson  
U.S. Department of Agriculture Bldg.  
3727 Government Street  
Alexandria, La. 71301

M. B. West  
Symons Hall  
University of Maryland  
College Park, Md. 20742

D. J. Fedewa  
201 Federal Bldg.  
Lansing, Mich. 48904

C. G. Rock  
90 W. Plato Boulevard  
St. Paul, Minn. 55107

G. R. Knight  
430 North Street  
Jackson, Miss. 39201



## Field Stations and Cooperation With Universities

D. M. Bay  
555 Vandiver Drive  
Columbia, Mo. 65201

D. L. Herbert  
Federal Bldg. and U.S. Court House  
Room 398  
Helena, Mont. 59626

J. L. Aschwege  
100 Centennial Mall North, Room 273  
Lincoln, Nebr. 68508

Charles Drain  
Max C. Fleischmann Agriculture Bldg.,  
Room 232  
University of Nevada  
Reno, Nev. 89507

C. W. Hammond  
6 Loudon Road  
Room 203 Flanders Office Bldg.  
Concord, N.H. 03301

J. S. Buche  
Room 204, Health and Agriculture Bldg.  
Trenton, N.J. 08625

E. J. Berger  
Federal Bldg. and U.S. Court House  
Griggs Avenue at Church Street,  
Room C-203  
Las Cruces, N. Mex. 88001

G. W. Suter  
Department of Agriculture and Markets  
State Campus, Building 8, Room 800  
Albany, N.Y. 12235

D. C. Tucker  
1 W. Edenton Street  
Raleigh, N.C. 27611

R. F. Carver  
New Federal Bldg., Room 345  
Fargo, N. Dak. 58102

H. L. Carter  
New Federal Bldg., Room 608  
200 N. High Street  
Columbus, Ohio 43215

J. E. Cochrane  
523 Old Post Office Bldg.  
Oklahoma City, Okla. 73102

P. M. Williamson  
1735 Federal Bldg.  
1220 S.W. Third Avenue  
Portland, Oreg. 97204

W. C. Evans  
2301 N. Cameron Street, Room G-19  
Harrisburg, Penn. 17110

R. M. Foster  
1835 Assembly Street, Room 1008  
Columbia, S.C. 29201

J. C. Ranek  
3528 S. Western Avenue  
Sioux Falls, S. Dak. 57117

Robert Hobson  
U.S. Court House  
8th & Broadway, Room 166  
Nashville, Tenn. 37203

D. E. Murfield  
555 Federal Bldg.  
300 E. 8th Street  
Austin, Tex. 78701

W. N. Sherman  
4432 Federal Bldg.  
125 S. State Street  
Salt Lake City, Utah 84147

C. A. Dunkerley  
203 N. Governor Street, Room 312  
Richmond, Va. 23219

J. M. Kitterman  
3039 Federal Office Bldg.  
909 First Avenue  
Seattle, Wash. 98174

G. M. Ferrell  
State Department of Agriculture  
Charleston, W. Va. 25305

C. D. Spencer  
801 W. Badger Road  
Madison, Wis. 53713

L. O. Larson  
Post Office and Court House Bldg.,  
Room 7008  
Cheyenne, Wyo. 82001

**ESS Senior Economists Outside of  
Washington, D.C.**

Gary C. Jones  
P. O. Box 1752  
Auburn, Ala. 36830

Paul Fuglestad  
Professional Bldg., Suite 129  
East Northern Lights Blvd.  
Anchorage, Alaska. 99504

Russell Gum  
Dept. of Agricultural Economics  
University of Arizona  
Tucson, Ariz. 85721

Shelby H. Holder, Jr.  
Dept. of Agricultural Economics and  
Rural Sociology  
University of Arkansas  
Fayetteville, Ark. 72701

Neil Cook  
145 U.S. Post Office and  
Courthouse Bldg.  
Little Rock, Ark. 72201

Clifford Dickason  
2020 Milvia Street  
Room 301 Tioga Bldg.  
Berkeley, Calif. 94704

Charles V. Moore  
Voohries Hall  
University of California  
Davis, Calif. 95616

Raymond L. Anderson  
Andrew Clark Bldg.  
Colorado State University  
Fort Collins, Col. 80523

Glenn A. Zepp  
University of Florida  
1130 McCarty Hall  
Gainesville, Fla. 32611

Wilmoth C. McArthur  
312 Conner Hall  
University of Georgia  
Athens, Ga. 30602

Jesse R. Russell  
University of Georgia  
Experiment Station, Room 206  
Experiment, Ga. 30212

Roy N. VanArsdall  
305 Mumford Hall  
University of Illinois  
Urbana, Ill. 61891

Clarence A. Moore  
Northern Regional Research Lab  
1815 North University Street  
Peoria, Ill. 61604

Jerry Sharples  
Dept. of Agricultural Economics  
Purdue University  
W. Lafayette, Ind. 47997

Paul Rosenberry  
Dept. of Agricultural Economics  
581 East Hall  
Iowa State University  
Ames, Iowa 50011

Walter G. Heid, Jr.  
U.S. Grain Marketing Research Center  
1515 College Avenue  
Manhattan, Kans. 66502

Anthony Grano  
305 Manly Miles Bldg.  
1405 South Harrison Road  
East Lansing, Mich. 48823

Boyd M. Buxton  
Dept. of Agricultural and Applied  
Economics  
University of Minnesota  
St. Paul, Minn. 55108



## Field Stations and Cooperation With Universities

John C. Crecink  
P.O. Box 862  
Mississippi State, Miss. 39762

Fred T. Cooke, Jr.  
Delta Branch Experiment Station  
Stoneville, Miss. 38776

Rudie W. Slaughter, Jr.  
Dept. of Agricultural Economics  
University of Missouri  
705 Hitt Street  
Columbia, Mo. 65201

Lloyd D. Bender  
Dept. of Economics  
Montana State University  
Bozeman, Mont. 59715

Norman Landgren  
U.S. Federal Bldg. and Courthouse,  
Room 435  
100 Centennial Mall  
North Lincoln, Nebr. 68508

George E. Frick  
James Hall  
University of New Hampshire  
Durham, N.H. 03824

Nelson Bills  
455 Warren Hall  
Cornell University  
Ithaca, N.Y. 14850

Henry C. Gilliam, Jr.  
Box 5365  
North Carolina State University  
Raleigh, N.C. 27607

Wallace McMartin  
Dept. of Agricultural Economics  
N. Dakota State University  
Fargo, N. Dak. 58105

Ronald D. Krenz  
Dept. of Agricultural Economics  
Oklahoma State University  
Stillwater, Okla. 74074

Ray F. Brokken  
325 Extension Hall  
Oregon State University  
Corvallis, Oreg. 97331

John Hostetler  
Executive Office Center  
1974 Sproul Road, 4th Floor  
Broomall, Pa. 19008

William L. Henson  
Room 210, Weaver Building  
Pennsylvania State University  
University Park, Pa. 16802

Bruce Hottell  
Dept. of Agricultural Economics  
Texas A&M University  
College Station, Tex. 77843

Don E. Ethridge  
Dept. of Agricultural Economics  
Texas Tech University  
Lubbock, Tex. 79409

Glen Wistrand  
P.O. Box 648  
Temple, Tex. 76501

David L. Wilson  
3235 Federal Bldg.  
125 South State Street,  
Salt Lake City, Utah 84111

Gordon Rodewald  
Dept. of Agricultural Economics  
Washington State University  
Pullman, Wash. 99164

Wayne Weber  
College of Agriculture  
Division of Resource Management  
West Virginia University  
Morgantown, W. Va. 26505

David Moyer  
Room 340, Agriculture Hall  
1450 Linden Drive  
University of Wisconsin  
Madison, Wis. 53706

## **Organizational Listing of ESS Officials**

### OFFICE OF THE ADMINISTRATOR

Kenneth R. Farrell, Administrator  
(Vacant), Associate Administrator  
Doris Sanchez, Assistant to the  
Administrator

William E. Kibler, Deputy Administrator  
for Statistics

James L. Olson, Associate Deputy  
Administrator

Marshall L. Dantzler, Assistant to  
the Deputy Administrator

Glen Fisher, International Programs  
Officer

J. B. Penn, Deputy Administrator for  
Economics

(Vacant), Associate Deputy  
Administrator

Vicki Smith, Assistant to the Deputy  
Administrator

Allan S. Johnson, Deputy Administrator  
for Administration

Richard E. Ballard, Associate Deputy  
Administrator

Laura Snow, Assistant to the Deputy  
Administrator

Marshall R. Godwin, Senior Analyst

Benjamin R. Blankenship, Director,  
Information Staff

Oswald P. Blaich, Director, Program  
Evaluation and Development Staff

Jean R. Redmond, Director, Equal  
Opportunity and Civil Rights Staff

Georgiana Francisco, Director,  
Legislative Liaison Staff

### ECONOMICS

J. B. Penn, Deputy Administrator for  
Economics

(Vacant), Associate Deputy  
Administrator

Vicki Smith, Assistant to the Deputy  
Administrator

Joseph Braxton, Director,  
Administrative Management Staff

### National Economics Division

John E. Lee, Jr., Director

Gene Mathia, Associate Director

Lynn Rader, Assistant to the Director

Alden Manchester, Senior Economist

Wayne Rasmussen, Chief, Agricultural  
History Branch

Dick Crom, Chief, Animal Products Branch

Milton Ericksen, Acting Chief, Crops  
Branch

David Harrington, Chief, Farm Sector  
Economics Branch

Ken Clayton, Chief, Food and  
Agricultural Policy Branch

Jim Zellner, Chief, Food Economics  
Branch

Robert Bohall, Chief, Fruits,  
Vegetables, and Sweeteners Branch

George Hoffman, Acting Chief, Economic  
Indicators and Statistics Branch

Ronald Meekhof, Chief, Inputs and  
Finance Branch

### International Economics Division

T. Kelley White, Director

Patrick O'Brien, Assistant Director  
(Situation and Outlook)

Charles Hanrahan, Assistant Director  
(Research)

Kathryn Zeimetz, Assistant to the  
Director

Arthur B. Mackie, Senior Economist

Cheryl Christensen, Chief, Africa and  
Middle East Branch

Lon Cesal, Chief, Agricultural  
Development Branch

Carmen Nohre, Chief, Asia Branch

Tony Malish, Chief, Eastern Europe and  
USSR Branch

Wade Gregory, Chief, Latin America  
Branch

(Vacant), Chief, North America and  
Oceania Branch

Vernon Roningen, Chief, Trade Policy  
Branch

Reed Friend, Chief, Western Europe  
Branch

Patrick O'Brien, Acting Chief, World  
Analysis Branch



## Organizational Listing of ESS Officials

### Natural Resource Economics Division

Melvin L. Cotner, Director  
Byron L. Berntson, Assistant to the Director

Harold Stults, Deputy Director, Water Resources  
Gary Taylor, Chief, River Basin Branch  
William Heneberry, Assistant to the Chief  
Roger Strohbehn, Chief, Water Branch

Velmar Davis, Deputy Director, Land Resources  
John R. Schaub, Chief, Pest Control Branch  
William D. Anderson, Acting Chief, Land Branch  
John Day, Acting Chief, Resource Systems Branch

### Economic Development Division

Kenneth L. Deavers, Director  
Donald D. Steward, Assistant to the Director  
Alan R. Bird, Senior Economist  
Clark Edwards, Senior Economist

Thomas F. Hady, Deputy Director, Community Resources  
Carol Meeks, Leader, Housing Program Area

Fred K. Hines, Leader, Regional Analysis Program Area  
Jerome M. Stam, Leader, State and Local Government Program Area

Max F. Jordan, Deputy Director, Human Resources  
Thomas A. Carlin, Leader, Income Studies Program Area  
Robert Coltrane, Leader, Manpower Studies Program Area  
Calvin L. Beale, Leader, Population Studies Program Area  
Bernal L. Green, Leader, Health and Education Program Area

### Data Services Center

Alice Tennies, Director  
Alice Tennies, Acting Leader, Data Management and Support Group  
John J. Wilson, Leader, Systems and Programming Group  
Robert B. Rovinsky, Leader, Operations Research Group

### STATISTICS

William E. Kibler, Deputy Administrator for Statistics  
James L. Olson, Associate Deputy Administrator  
Marshall L. Dantzler, Assistant to the Deputy Administrator  
Robert A. Beach, Director, Administrative Management Staff  
Glen Fisher, International Programs Officer

### Estimates Division

Donald W. Barrowman, Director  
Frederic A. Vogel, Chief, Methods Staff  
Robert L. Schulte, Chief, Crops Branch  
Robert L. Freie, Chief, Livestock, Dairy, and Poultry Branch  
Fred Thorp, Chief, Prices and Labor Branch

### Survey Division

Wilbert H. Walther, Director  
(Vacant), Chief, Data Collection Branch  
(Vacant), Chief, Data Services Branch  
Paul A. Welsh, Chief, Systems Branch

### Statistical Research Division

Charles E. Caudill, Director  
Richard J. Schrimper, Clearance Officer  
Harold F. Huddleston, Principal Research Statistician  
Margaret Weidenhamer, Social Science Analyst

Galen F. Hart, Chief, Yield Research Branch  
Rich Allen, Chief, Remote Sensing Branch  
Norman Beller, Chief, Sampling Frames and Survey Research Branch



State Statistical Division

Raymond R. Hancock, Director

Robert E. Schooley, Deputy Director

Crop Reporting Board

James L. Olson, Chairman

(Vacant), Secretary

ADMINISTRATION

Allan S. Johnson, Deputy Administrator  
for Administration

Richard E. Ballard, Associate Deputy  
Administrator

Laura Snow, Assistant to the Deputy  
Administrator

Administrative Services Division

Charles W. Sneider, Director

H. D. Moore, Chief, Procurement and  
Property Management Branch

H. O. Altenberg, Chief, Records,  
Systems, and Analysis Branch

Budget And Finance Division

Robert A. DiGregorio, Director

L. David Young, Deputy Director

Arthur Sauer, Chief, Budget Branch

Leon H. Richmond, Chief, Financial  
Management Branch

Personnel Division

Joseph R. Ellis, Director

Joan B. Golden, Assistant to the  
Director

Vincent Huelskamp, Employee  
Development and Relations Branch

George Tsempales, Chief, Operations  
Branch

Mildred Russell, Chief, Program  
Development and Evaluation Staff

INFORMATION STAFF

Benjamin R. Blankenship, Jr., Director

Kent D. Miller, Chief, Current  
Information and Popular Publications  
Branch

James R. Sayre, Chief, Research  
Information Branch

Benjamin R. Blankenship, Acting  
Chief, Information Services Branch





1022201303



UNITED STATES DEPARTMENT OF AGRICULTURE  
WASHINGTON, D.C. 20250

---



POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF  
AGRICULTURE  
AGR 101

THIRD CLASS



### Economics and Statistics Service

The Economics and Statistics Service (ESS) collects data and carries out research on food and nutrition, international agricultural trade, natural resources, and rural development. The Economics unit researches and analyzes production and marketing of major commodities; foreign agriculture and trade; economic use, conservation, and development of natural resources; trends in rural population, employment, and housing and rural economic adjustment problems; and performance of agricultural industry. The Statistics unit collects data on crops, livestock, prices, and labor, and publishes official USDA State and national estimates through the Crop Reporting Board. Through its information program, ESS provides objective and timely economic and statistical information for farmers, government policymakers, consumers, agribusiness firms, cooperatives, rural residents, and other interested citizens.